Doctorate of Philosophy (PhD) Thesis

The Influence of Economic Factors on Settlement Continuity across the LBA/Iron Age Transition on the Northern Levantine Littoral.

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"Images are only images. But if they are numerous, repeated, identical, they cannot all be wrong. They show us that in a varied universe, forms and performances can be similar: there are towns, routes, states, patterns of trade which in spite of everything resemble each other. We are indeed told that there are as many 'means of exchange as there are means of production'. But in any case these means are limited in number, since they are directed to solving elementary problems the whole world over."

Fernand Braudel

"At the core of human history is a long tradition of persistence in the face of adversity and resilience in the throes of crisis."

Karl Butzer

ABSTRACT

Few attempts have been made to synthesise Late Bronze Age (LBA) and Iron Age trade patterns in the northern Levant on a regional scale, despite the availability of fine-grained excavation data for individual sites. Even less attention has been given to the degree of continuity or change between the economic systems that obtained across the transition between these two periods, which was marked by a widespread destruction of sites across the Eastern Mediterranean.

Long-distance trade was conducted at unprecedented levels in the Eastern Mediterranean at the close of the LBA. Ugarit was a strategic node between land and sea routes and its entrepreneurial merchants engaged in transactions for economic gain. Why Ugarit was never meaningfully resettled again after its destruction in the early 12th century BC is a question of regional importance with respect to gaining a better understanding of how and why the mechanisms of trade evolved at this critical time. That Phoenicia came to dominate maritime trade in the Mediterranean in the succeeding period is widely accepted, but the reasons behind this ascendancy are poorly understood.

This thesis quantitatively examines contextualised imported ceramic data (Aegean and Cypriot wares) and the archaeological, textual and scientific evidence of the bronze industry and its supply chains. The evidence from the northern Levant is considered within its regional setting, with coastal Syro-Palestine divided into four zones of interaction in order to improve resolution on variations in long-distance trading relationships. The evidence from Cyprus is also assessed, given its importance as a leading supplier of both ceramics and copper to the Levant. A world-systems approach is then applied to this first stage of analysis to assess the intensity and directness of LBA trading contacts between producer and consumer and how these may have developed over time.

Trading relationships between the Aegean and Cyprus with different parts of the Levant littoral were not uniform during the LBA, either in intensity or directness. Evidence for continuity in LBA trading relationships across the LBA/Iron Age transition is strongest between Phoenicia and Cyprus, particularly the west coast of the island. Interestingly,

the former is not only the sole part of the Levantine littoral to escape destruction at the close of the LBA but also may well have had the most direct and intense LBA trading relationships with the Aegean.

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ACKNOWLEDGMENTS

My interest in archaeology dates back to my childhood in Wales where, based on a strong Biblical tradition, history started in Egypt and Mesopotamia, not classical Greece. Having an uncle who had read Archaeology also, no-doubt, contributed. However, on the advice of my metallurgist father, I took a degree in Natural Sciences and embarked upon a career in finance and banking in the oil industry and the City of London.

The build-up to this period of full time study was protracted. In the late 1980s, I began to study Egyptology at Birkbeck College with Eric Uphill. Five years of courses with Eric provided a sound foundation in Egyptian history. This was followed by four years on the Aegean and Cyprus with Olga Krzyzkowska. I owe a great deal to each of them. The defining moment as far as the subject of this thesis is concerned came in 1991, when my husband and I visited Ugarit with Jonathan Tubb of the British Museum. My debt of gratitude to Jonathan is enormous: for introductions to countless scholars, for freely sharing his profound knowledge of Levantine material culture and, not least, for acting as a lender of last resort of books. Without his belief that an "*outsider*" could approach the subject with a fresh eye, it is unlikely that I should have started this project.

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with Linda Hulin of Reading University, who has acted as a one-woman self-help group on Cypriot archaeology.

Many senior scholars have corresponded with me during the course of my research, and their contributions are duly acknowledged at appropriate points in the thesis itself. Without their rapid responses, often on the subject of excavations in course of publication, this thesis would be a less informative document. I especially thank Dr Klaas Vansteenhuyse for allowing me to mention very preliminary unpublished data from the 2004 season at Tell Tweini in Syria, which enabled me to test predictions about the nature of the imported ceramic assemblage there. I must also acknowledge specifically Dr Elizabeth French's kindness and substantial contribution. As a leading figure in the field of Mycenaean ceramic studies, Lisa has a unique perspective of this body of material and I am very fortunate to have been able to discuss the corpus of Mycenaean pottery in the Levant extensively with her over the past three years.

In France, Mme Annie Caubet was kind enough to show me the Ugarit Room at the Louvre personally. M. Yves Calvet also recently guided me through the major exhibition at Lyon entitled *"Le Royaume d'Ougarit. Aux Origines de l'Alphabet"*, giving a perspective on Ugarit which only the director of an excavation can provide. I thank them both for being so generous with their time.

In the field of textual studies, Drs Christopher Monroe and Claude Chanut provided me with copies of their recent and, so far, unpublished PhD theses. I also thank Dr Assaf Yasur-Landau for drawing my attention to the chapter in his unpublished PhD thesis dealing with what is known from Linear B sources about foreign contacts. Silvia Ferrara, meanwhile, has shown great patience in answering my questions on Cypro-Minoan while writing-up her own thesis on this unreadable script.

Since completing her MSc at the Institute, my great friend Sue White has read this work several times, and I thank her for her support, thoroughness and sense of humour. Finally, I am infinitely lucky to have a husband who did not blink when I began to talk about leaving investment banking to pursue this subject more formally. Chris has helped to keep my feet on the ground in the 21st century AD when my head was wrestling with the 12th century BC.

CHAPTER 1: INTRODUCTION

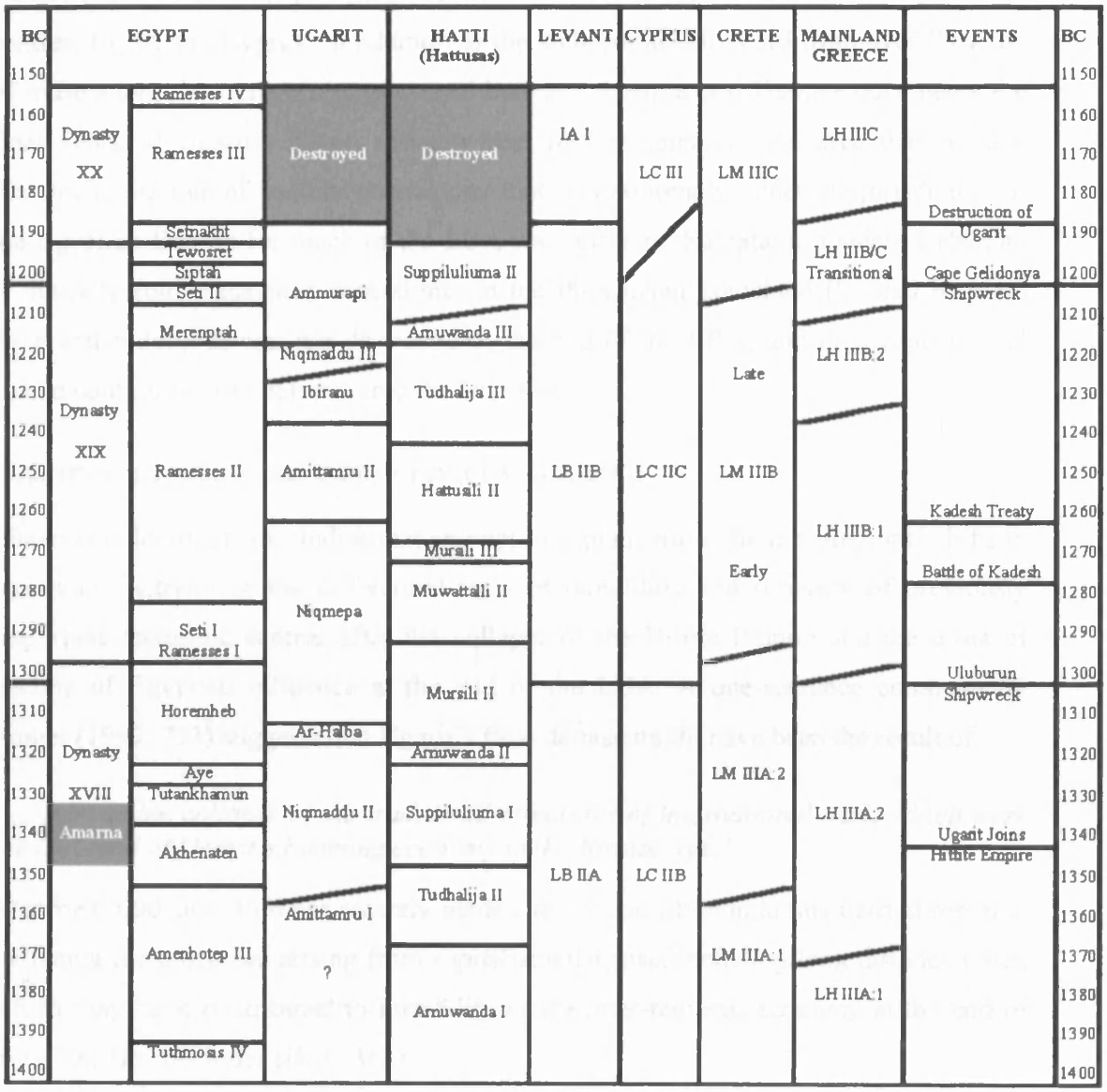
This thesis investigates the excavated archaeological record of the northern Levantine littoral for specific evidence of continuity or change in the regional economic structure after the period of destruction that enveloped the Eastern Mediterranean at the end of the Late Bronze Age (LBA). It also integrates relevant textual evidence and seeks to place this area within its regional context as part of the Eastern Mediterranean and Ancient Near Eastern trading networks by comparing the northern Levantine evidence with that from the south and from Cyprus. Throughout this thesis, the term 'Levant' is used to describe the geographical area of the Eastern Mediterranean now known as Syria, Lebanon, Israel, Jordan and the territories administered by the Palestinian Authority.

The northern Levantine coast contains the major trading city of Ugarit, which was violently destroyed at the end of the LBA. Ugarit was never resettled in a meaningful way again. Why its prosperous history, predicated largely on long-distance trade, came to a close is a question of regional importance with respect to how, and why, the mechanisms of trade evolved across this late 13th/early-12th century BC period of destruction and the transition into the Iron Age. In addition, that Phoenicia, especially the city-states of Tyre and Sidon, came to dominate maritime trade throughout the Mediterranean in the succeeding centuries is accepted by most scholars. Nevertheless, what remain poorly understood are the reasons behind the rise to pre-eminence of this area from the beginning of the Iron Age onwards, compared with the demise of Ugarit further north.

The period under consideration (approximately 25 years before 1200 BC to 50 years after this date) is characterised by a widespread destruction of sites, from the Argolid to the Euphrates and from the Anatolian Plateau to Gaza (see Map 1). These events brought to an end the *Pax Hethitica*. A period of peace and prosperity ensued in the northern Levant after the Egyptian and Hittite Empires settled their differences by agreeing a treaty in c. 1258 BC (following the inconclusive battle of Kadesh). Figure 1 summarises regional synchronisms during the LBA, showing the Pharaohs of Egypt, the kings of Hatti and Ugarit as well as the relative ceramic chronologies of the Levant, Cyprus and Mainland Greece. Key events are also shown, such as the battle of Kadesh

and the destruction of Ugarit, as well as the dates of the shipwrecks at Cape Gelidonya and Uluburun (which have added so much to the study of trade in the past 40 years).

Figure 1: East Mediterranean Synchronisms



Source: Phillips (in press): Figure 1 for Egypt, Crete and Mainland Greece; Steel (2004): 13, Table 1.1 for Cyprus; Anon (2002): 312-315 for Ugarit, Hatti and Events; Tubb (1998): 153 and Mazar (1993): 30 for the Levant.

The chronology for this part of the world in the second millennium BC is by no means universally agreed. A major initiative is underway under the direction of Manfred Bietak that aims to resolve these issues through a major international collaborative

effort (the SCIEM Project) (Bietak, 2000: 11). Issues relating to chronology will not be pre-empted here, but are dealt with at appropriate points within this thesis.

Ugarit (defined as the tell of Ras Shamra and its harbour Mahadu, modern Minet el-Beida) was the key node of Hittite maritime trade for transactions with other Levantine centres, Egypt and Cyprus. In addition to the archaeological record from over 70 years of excavation, the richest textual record between Amarna and Hattusa documents the final years of Ugarit's history. Meanwhile, further south, in the area that became Phoenicia, the fate of another coastal city that was notionally under the jurisdiction of the Egyptian Empire for much of the LBA was different. Sarepta, in modern Lebanon, is the only fully excavated coastal site in the Phoenician homeland (located between Tyre and Sidon). It was not destroyed at the end of the LBA, and its archaeological record continues without break into the Iron Age.

Unanswered Questions from Previous Research

I have not identified any studies that attempt to explain either the intra-regional shifts in mercantile activity or the differential rates of rebuilding and recovery of previously important economic centres after the collapse of the Hittite Empire and the onset of decline of Egyptian influence at the end of the LBA. A one-sentence comment by Singer (1999: 733) suggests that Ugarit's final demise might have been the result of:

"... the sudden collapse of the traditional structures of international trade which were the lifeblood of Ugarit's booming economy in the Bronze Age."

Monroe (2000: 361-363) has recently made a major contribution to this field of research by listing the processes arising from capitalist enterprise, including long distance trade, which may have contributed to instability in the inter-regional economy at the end of the LBA. He concludes (*ibid*,: 363).

"The most populous, wealthiest city-states were the hardest hit, because they were the most dependent on the exchange network... The wealthiest towns were also the most attractive targets for the marauding groups who took over and restructured the system."

This thesis examines these premises by building a regional picture of certain trade patterns before and after the destructive events at the close of the LBA based on the archaeological evidence. The nature of the archaeological record is such that this enquiry has to concentrate on a subset of the overall cargoes that passed through the

port of Ugarit. Texts reveal a large-scale trade in grain, cloth, clothing, oil, horses and even slaves (Yon, 1994: 426), but the archaeological record cannot be used to measure the intensity of these transactions due to preservation issues. Fortunately, imported ceramics and bronze artefacts, do survive in sufficient quantities for their distribution to be of use in reconstructing past trading relationships.

There is hardly any mention of trade in pottery in LBA textual sources (Van Wijngaarden, 1999; S. Sherratt, 1999) and this is consistent with the absence of records of pottery in the Pylos Linear B tablets (T. Whitelaw, personal communication, March 2001). This absence has prompted Susan Sherratt (2000) to suggest that pottery played no part in negotiating élite status.

If they are mute on ceramics, the texts have much to add in the case of supply of copper and tin (and metals generally), especially with respect to the involvement in this trade of individual entrepreneurs at Ugarit. The great merchants of Ugarit in the closing years of the LBA were literate and their archives record their involvement in the metals trade. As is discussed in Chapter 4, several private archives in Ugarit contain records of commercial transactions, including consignments of raw tin and copper and manufactured items made of bronze. This extraordinary survival means that we have more knowledge of the activities of the merchants engaged in long-distance trade in LBA Ugarit than, for example, those of Europe in the early Middle Ages (McCormick, 2001: 15).

The trade in the raw materials for bronze was unquestionably strategic as bronze weapons would have been essential for maintaining the balance of power between the competing empires. As Lagarce and Lagarce (1997) have pointed out, the location of the metallurgical installations in the palace of the Queen Mother of Ugarit at Ras Ibn Hani (including the only oxhide ingot mould so far discovered) underlines the importance of copper in LBA society, both for manufacturing tools required for everyday life and as a strategic material. Perhaps copper and tin held a not dissimilar position in LBA society to that of crude oil today: essential raw materials for maintaining the *status quo*. Moreover, bringing tin to the foundries of the Levant, Cyprus and beyond required both long-distance trade overland by donkey caravan as well as port facilities for onward maritime shipment. Ugarit was strategically placed to profit from this trade, at the nexus or "*Schnittpunkt*" of these routes (Stockfisch, 1999).

This thesis will present a picture of LBA trading relationships that moves away from the generalisations that have entered the archaeological literature about the nature of this trade and the participants within it. As well as reviewing the current state of the debate on this subject, Chapter 2 justifies the theoretical perspective underlying this thesis, especially a departure from models that are based purely on either Substantivist or Formalist perspectives of political economies. The chapters that follow present the results of an analysis of long-distance trade conducted in a manner that is as holistic as possible, using all the available classes of evidence, and without pre-supposing the primacy of one model of the political economy of this period over another.

The analysis in Chapter 3 is built on the foundation of a quantitative, bottom-up, approach to the LBA imported ceramic repertoire (specifically Mycenaean and Cypriot wares) from comparable excavated contexts in representative Levantine coastal sites. In Chapter 4, archaeological, textual and scientific evidence related to the bronze industry is reviewed. This analysis includes Levantine sites that have produced either evidence of metalworking, texts related to the copper or tin trade or scientific studies of the sources of these metals. Both chapters reveal regional variations within the Levant and, in each case, a second stage of analysis is undertaken that asks questions about the intensity of interaction between the various participants in the LBA Eastern Mediterranean trade network and how these may have changed over time. Whether goods reached their point of deposition directly, or through the activities of third-party intermediaries is also considered.

The overall objective of this research is to assess whether economic factors played a part in determining the divergent destinies of port-cities of the northern Levant in the Iron Age. The ultimate aim is to put forward an explanatory hypothesis for why certain sites were spared destruction, what led to the rapid recovery of certain destroyed sites and why Ugarit (in many ways the Rotterdam of the LBA Levant – lying at the nexus of major overland/riverine and maritime trade routes) was abandoned for good. For example, I examine whether certain relationships based on long-distance trade during the LBA can be correlated with site survival across the end-LBA destruction horizon as well as whether such relationships can be used to rationalise why some sites were apparently not destroyed at all, based on currently available archaeological evidence. Differences in the identity of LBA trading partners and the intensity and directness of

interactions between them, change in the availability of key commodities and the alteration of major trade arteries are among the issues examined, along with the degree of influence of invaders, often collectively referred to as the *Sea Peoples*.

Four Levantine Zones of Interaction

A general observation about previous studies on LBA trade, discussed at greater length in Chapter 2, is that they are either based on the evidence from individual sites or make generalisations about this activity using units of analysis that are too large. In order to facilitate better resolution on an intra-regional scale within the Levant, and to reflect the fact that access to the interior from the coast of the Levant is strongly controlled by topography (which varies greatly along its length), I have divided this region into four broad zones of interaction – from north to south Zones L1-L4. Map 2 shows these zones superimposed on a topographical map. As well as being delineated by topographical factors, these zones also broadly reflect the political geography of the region in the last half-century of the LBA and the first century or more of the Iron Age. I will refer to Zones L1 and L2 as the northern Levant, while Zones L3 and L4 are termed the southern Levant. The border between Zones L1 and L2 broadly corresponds with the boundary between the Egyptian and Hittite Empires after the battle of Kadesh. Splitting the region in this way moves my analysis away from the artificial constraints of modern political boundaries and makes the units of analysis more congruent with the realities that faced long-distance traders arriving in the Levant in the LBA.

The four Levantine zones may be described as follow:

1. L1 centres on Ugarit and extends to the Euphrates sites of Emar and Carchemish, with which Ugarit had commercial and administrative links respectively.

2. L2 includes the core area of Iron Age Phoenicia (from the mouth of the Nahr el-Kebir in the north to just south of Tyre) in which the only fully excavated and published coastal settlement site is Sarepta. This site is likely to have had important inland links via the Litani River valley to the Biqa Valley and the headwaters of the Jordan.

3. Coastal zone L3 encompasses the Carmel Coast of Israel and the Akko Plain. Inland, it stretches to the Jordan Valley. Tell Abu Hawam was one of the most

active LBA ports and served as one of the entry points for goods destined for the Jezreel and Jordan Valleys to sites such as Megiddo and Beth Shean.

4. L4, meanwhile, contains Iron Age Philistia on its coast, with major ports at Ashkelon and Ashdod. Chapter 3 concentrates on Ashdod due to the greater availability of publications of LBA levels. Some recent excavation results from Ashkelon have been made public in a lecture and this information is included in the discussion where appropriate (Stager, 2004).

The geopolitical background of these zones in the closing decades of the LBA will now be briefly discussed.

Zone L1: The Hittite Sphere

Zone L1 was under Hittite control at the close of the LBA, having been brought into the Hittite Empire in c. 1340 BC. This empire held territory along the Euphrates at least as far south as Emar, which added to the security of land-based trade between this main artery for donkey caravans and the coast. A viceroy based at Carchemish had oversight of the cities of Ugarit, Emar and Alalakh, while another at Aleppo governed the southern part of the territory. Unfortunately, the pre-First World War excavations at Carchemish by Sir Leonard Woolley did not penetrate LBA levels and the LBA archives of this important Hittite viceregal seat have not been discovered as yet.

From the mid-14th century BC until the destruction of the cities of the Hittite heartland in c. 1200 BC, North Syria was part of the Hittite Empire. Before this, expansionist Pharaohs of the Egyptian Dynasty XVIII and the indigenous Syrian Kingdom of Mitanni had vied for the balance of power until Suppiluliuma I conquered the region (see Figure 1) (Akkermans and Schwartz, 2003: 329). The Hittites and Egyptians settled their differences after the inconclusive battle of Kadesh by agreeing a peace treaty in c. 1258 BC. The border between Hittite and Egyptian influence was then drawn in the area of Kadesh. In terms of the zones of interaction employed in this thesis, Zone L1 was part of the Hittite Empire, and arguably its window on trade with the Eastern Mediterranean region.

Based on the textual sources which, admittedly, provide only a partial picture, the Hittites appear to have been relatively lenient overlords towards Ugarit. Unlike Emar, for example, the Kingdom of Ugarit was not occupied by a Hittite military force

(Lebrun, 1995). Especially towards the end of its history, the rulers of Ugarit showed a degree of interpretation of how Hittite imperial demands were met and Ammurapi, the last king of Ugarit (see Figure 1) was able to think of himself more as an ally of the Hittite Great King than as his vassal (*ibid.*). Saying no to various demands from Hattusa was certainly a possibility.

The economy of the Hittite Empire in its heartland in Anatolia no doubt depended on agricultural produce (Bryce, 2002: 87). In addition to taxation of agricultural production, tribute from vassal states such as Ugarit contributed to the Hittite treasury's revenues. The latter was denominated in, and delivered as, consignments of both precious and utilitarian metals (*ibid.*). In addition to metals, wool and woollen garments feature prominently in the tribute lists from Ugarit. Bryce characterises the Hittite economy as having been relatively undiversified and one that did not engage directly with international trading partners during the LBA. While Hittite laws exist that define sanctions against persons that attack merchants (*ibid.*: 88), there seems to be no direct evidence of Hittite oversight of the way the merchants of Ugarit conducted their trade.

The impression one is left with is that the vast majority of the Hittite Empire's long-distance trade transactions was conducted through Ugarit and the empire's other principal port, Ura, which is located somewhere on the Cilician coast (*ibid.*: 93). Shipping goods to Hattusa from Ugarit involved moving them by ship to Ura first, from whence they proceeded overland to the capital (*ibid.*: 95). Overall, Bryce concludes that international trade was in the hands of foreign *"intermediaries and entrepreneurs"* (*ibid.*: 96). Beckman (1999) also concludes that trading was not a prime activity in Hattusa during the LBA (based on the archaeological evidence and texts). Such textual material as exists relating to Hittite merchants concerns their activities at Ugarit and Ura (*ibid.*). Beckman goes on to say that later trade routes (in the Persian and Roman periods) bypass Hattusa. He considers this to be evidence that the capital grew to pre-eminence through political and military factors, rather than by playing a strategic role in trade. Citing Weber, he characterises Hattusa as a "*princely city*" – a centre of power that extracts sustenance from the surrounding territory – rather than a trading city or a producer city (*ibid.*: 165).

Zones L2, L3 and L4: Egyptian Influence and Empire

The Pharaohs of the New Kingdom (essentially, the LBA) viewed themselves as rulers of an empire, both in the Levant and in Nubia (Morkot, 2001). This world-view is expressed both in royal imagery and in the terminology used to describe Pharaohs' relationships with the lands over which they had dominion (*ibid.*). Egyptian imperial ambitions in the Levant date back to the early Dynasty XVIII (Tuthmosis I's reign) (Morkot, 2000: 72) but reached a high point during the reign of Tuthmosis III (Redford, 1993: 192). Unlike the situation in Nubia, local political structures were left in place in the Levant. Nubia was conquered, the extant power structures of the native chiefs destroyed and replaced by a Viceroy, who ruled on behalf of Pharaoh (*ibid.*).

The extent of Egyptian territory in the Levant waxed and waned, with the high point probably marked by Tuthmosis III's campaigns in Syria as far north as the Euphrates. Bienkowski (1989) suggests that Tuthmosis III's motivation for controlling Palestine was not only to extend the borders of Egypt (to prevent another episode of Canaanite rule after the Hyksos period) but also to secure the route to the commercially important area of Syria.

In Nubia, Egyptians controlled the production of its valuable raw materials (particularly gold) and this was also the case with respect to copper and turquoise production in Sinai and at Timna in the Negev desert (Redford, 1993: 193). In the Levant, in contrast, control of the two main north-south transit arteries (the coastal *Via Maris* and the King's Highway in Transjordan) was deemed sufficient (*ibid.*). This would be consistent with Bienkowski's (1989) explanation for the motivation of securing Palestine early in Dynasty XVIII. By the Ramesside period, the Egyptian administration of its Levantine empire was controlled by a limited military presence (at centres staffed by a small number of soldiers and administrators) working alongside vassal princes. Higginbotham (2000: 71) believes these nobles actively Egyptianised themselves to a varying extents. Their responsibilities seem to have been confined to collecting taxes and maintaining the peace (*ibid.*: 72) to provide stable conditions for trade to proceed.

Textual evidence of Egypt's post-Amarna administration of the Levant is very limited (*ibid.*: 17). The principal problem that faced Ramesses II in the Levant was securing the northern border between the Egyptian and Hittite Empires (*ibid.*: 28). As Redford (1993: 190-191) points out, Ramesses II's campaigns in the Levant did not substantially

re-draw the border between Hittite and Egyptian interests. Ugarit remained Hittite and Kadesh itself became Hittite again (*ibid.*) and had close commercial ties with Ugarit (see Chapter 4). To the south of Kadesh, Egyptian influence persisted for varying lengths of time in Zones L2, L3 and L4 until the final loss of all Levantine empire either late in Ramesses III's reign or early in that of Ramesses IV (Weinstein, 1992) or, at the latest, during Ramesses VI's tenure (Finkelstein, 2000). Finkelstein believes that a statue of Ramesses VI found at Megiddo does not fit in with Weinstein's view and favours a date late in the 12th century BC for the final loss of Egypt's empire in the Levant.

Perhaps unsurprisingly, Zone L2 is the first to slip from under close Egyptian administration. An Egyptian administrative presence had been based at Kamid el-Loz (Kumidi) since at least the Amarna period (Higginbotham, 2000: 19). This site is strategically located on the important north-south trade route from Syria in the Biqa Valley. Weinstein (1992) places Egypt's withdrawal from this region before the end of Dynasty XIX. Hachmann, the excavator of Kamid el-Loz concurs with this, suggesting that Kumidi stayed under Egyptian influence for only a short time after the battle of Kadesh (Hachmann, 1983: 29). Hachmann also believes that it is questionable whether Kumidi ever regained its former importance during the reign of Ramesses II (*ibid.*). Susan Sherratt (2003a) has suggested that the Phoenician coast may well have been independent by the time of Ramesses II's death (see Figure 1 for chronology). There is no evidence of an Egyptian military presence from Lebanon after year 10 of Ramesses II's reign, the date on the badly preserved inscription at the Dog River (Nahr el-Kelb) close to the coast north of Beirut (Higginbotham, 2000: 34). Consequently, in the closing decades of the LBA, the port cities of Zone L2 may well have been free from Egyptian imperial direction and at liberty to conduct long-distance trade on their own terms. This is consistent with the fact that inscriptional evidence for Egyptian imperial institutions from the Ramesside period exists only at Beth Shean, Jaffa and perhaps Gaza. (*ibid.*: 71).

In Zone L3, there is evidence of rebuilding of an Egyptian garrison at Beth Shean dating to early in Dynasty XX, which may have been part of an attempt to secure the northern extent of the empire after the withdrawal from Zone L2 (Weinstein, 1992). The prosperity of the region during the LBA seems far from uniform, which is also the case

for Zone L4. Bienkowski (1989) has pointed out that the pottery and architecture of Hazor and Deir 'Alla declines in quality during the LBA compared with Beth Shean, where there was a direct Egyptian presence. The same may be said of Jericho in Zone L4 when compared with the Egyptian centres at Lachish and Tell el-'Ajjul (*ibid.*).

The challenges Ramesses III faced were different from those of his predecessors. Not only did the activities of the *Sea Peoples* affect his remaining empire in the Levant, but these groups also threatened Egypt itself (Higginbotham, 2000: 52). His response in Zone L3 is to strengthen the garrisons at the border posts (*ibid.*: 53). In terms of the economy, Wengrow (1996) (citing Susan Sherratt's (1994) opinion that palatial economies had ceased to control access to and the circulation of bronze by the end of the LBA) suggests that the Egyptian administration was forced to intensify agricultural production in Egypto-Canaan to make up for their loss of control of the trade in strategic metals. The evidence for this comes from the distribution of collared-rim pithoi (whose chronology spans the LBA/Iron Age transition), which he believes were the containers for such foodstuffs destined for export from coastal Zone L3 (*ibid.*). Interestingly, collared-rim pithoi are not found in coastal Zone L4 (*ibid.*). This issue is discussed further in Chapter 5.

In Zone L4, the withdrawal of Egyptian influence seems to have been a complex process. The Harris Papyrus (dating to shortly after Ramesses III's death) lists Ramesses III's conquests of various *Sea People* groups, including the Philistines, and goes on to say that he *"...established them in fortresses bound in my name..."* (Higginbotham, 2000: 55). Higginbotham points out that if this statement is taken to mean that Ramesses III established the Philistines in the coastal southern Levant in an area straddling the key *Via Maris*, this may be putting a good face on an incursion that he was unable to prevent (*ibid.*: 56). Certainly, it is hard to believe that he would have deliberately *"severed the overland route to Canaan"* and compromised the accessibility from Egypt of his remaining empire in the Levant (Weinstein, 1992: 120).

The area around Philistia, particularly the Shephelah (the inland plain to the east of Philistia that contains Lachish), appears to have remained under Egyptian control after the first Philistines arrived. The excavator of Ekron and Ashdod (respectively Dothan and Zuckerman, 2004 and Stager, 2004) date this to the second quarter of the 12th century BC. Dothan and Zuckerman (2004) believe that large-scale population

movements continued for a time (based on the parallel evolution of Philistine Monochrome and Mycenaean IIIC pottery in Cyprus and Cilicia). Finkelstein (2000) also believes that the migrant *Sea Peoples* continued to arrive over a long period of time (until the reign of Ramesses VI).

By the middle of the 12th century BC the Philistines dominated the coastal plain of Zone L4 while the Egyptians continued to exert influence inland in Zone L4 and in Zone L3 to the north (Weinstein, 1992). As already mentioned, the date of the final withdrawal of Egypt from the Levantine empire is open to question. Whether it was during Ramesses III, IV or VI's reign, Egypt's New Kingdom Empire in the Levant had vanished before the end of the 12th century BC.

Data Set

This thesis concentrates on two classes of material culture evidence, namely imported ceramics and items made of bronze and its component metals.

Imported Ceramics

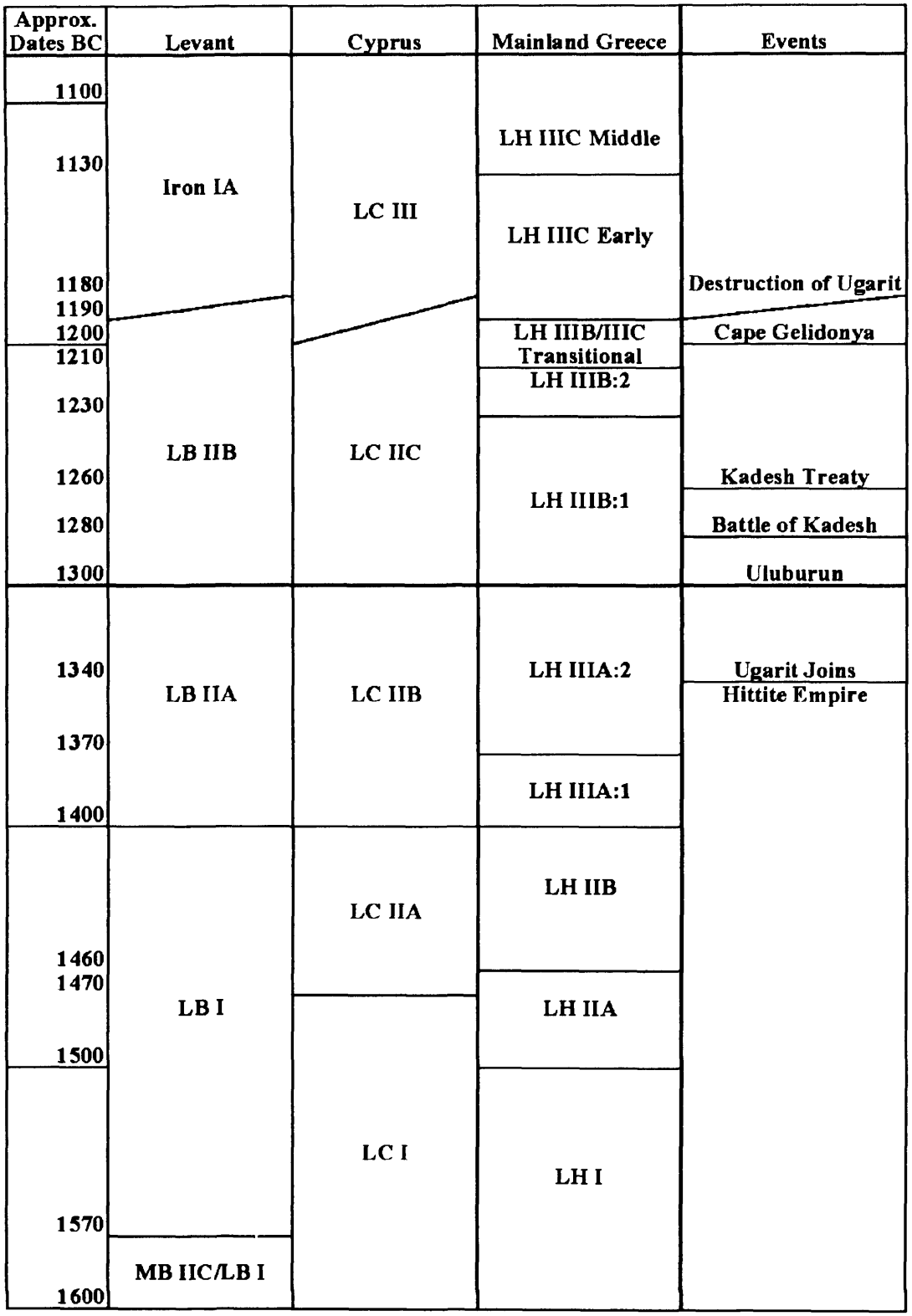
Chapter 3 presents a study of the imported ceramic evidence from sites along the length of the Levant Coast and Cyprus. The presence of significant quantities of Mycenaean and Cypriot ceramics in the archaeological record of the Levantine coast demonstrates that these artefacts reached their place of deposition through organised trade, rather than by random processes by which small numbers of vessels can end up in "foreign" depositional contexts. In addition to acting as a container for organic trade goods, the repertoire of imported open ceramic shapes in the Levant, both Mycenaean and Cypriot, suggests that pottery moved for its own sake (S. Sherratt, 1999).

Chapter 3 reveals quantitative differences in imports from the Aegean and Cyprus along the length of the Levantine littoral. This is a necessary step on the path to gain better insight into the directness and intensity of trading relationships between the Aegean, Cyprus and the Levantine emporia at the close of the LBA.

Figure 2 shows the relative ceramic chronology of the Levant, Cyprus and Mainland Greece between 1600 and 1100 BC, along with approximate absolute dates. As already mentioned in connection with Figure 1, the degree of controversy surrounding these

chronologies (such as the timing of the appearance of Late Helladic (LH) IIIC and Late Cypriot (LC) IIIA wares) will not be discussed further here, but addressed in Chapter 3.

Figure 2: Relative Ceramic Chronology of the Levant, Cyprus and Aegean



Source: Tubb (1998): 153 and Mazar (1993): 30 for the Levant; Steel (2004) Table 1.1 for Cyprus; Phillips (in press): Figure 1 Mainland Greece; Anon (2002): 312-315 for Events.

Hankey (1993: 103) made the remark that:

"Aegean pottery in the Levant is almost always a minor accompaniment to LC I and II pottery."

Considering both classes of imports to the Levant is critical, therefore, in my view. Yet systematic consideration of this issue is only a recent feature in a minority of excavation publications (e.g. Ben-Dov, 2002; Koehl, 1986). In addition, contextual analyses have, so far, concentrated on only Mycenaean wares, and have not taken into consideration either other imports or local wares (e.g. Van Wijngaarden 1999, 2002; Steel, 2002). This study, therefore, looks at *both* main classes of imported pottery to seek insight into the trading relationships that underlie the arrival of these artefacts in the archaeological record and explanations for intra-regional variation therein.

Table 1 lists the sites discussed in Chapter 3 and summarises which were destroyed at the end of the LBA, whether they were rebuilt and also gives an indication of the abundance of Mycenaean and LBA Cypriot wares in the published archaeological record. A major coastal settlement has been selected for each of the Levantine zones for detailed analysis. This choice has been constrained by the availability of suitable excavation publications and this is discussed fully in Chapter 3.

My MA dissertation (Bell, 2001; some of the results of which are included in Bell, forthcoming) revealed significant differences in the imported ceramic assemblage of Sarepta compared with those of Ugarit and Tell Sukas further north in Zone L1. In view of this, Chapter 3 also investigates the archaeological record of Tell Dan and Kamid el-Loz, which lie inland from Sarepta and the Lebanese coast accessible via the Litani river valley, to trace the inland movement of Mycenaean ceramics (and their contents) via the Litani River valley from port.

Table 1: Summary of Sites included in Imported Ceramic Analysis

Site	LBA	Destroyed	Iron Age	Type	Zone	# Mycenaean	# Cypriot
Ugarit	✓	✓	✗	Coastal	L1	✓✓✓✓✓✓	✓✓✓✓✓✓
Sarepta	✓	✗	✓	Coastal	L2	✓✓✓✓	✓✓✓✓
Tell Dan	✓	✗	✓	Hinterland	L2	✓✓	✓
Kamid el-Loz	✓	✗	✓	Hinterland	L2	✓✓✓	✓✓
Tell Abu Hawam	✓	✓	✓	Coastal	L3	✓✓✓✓✓	✓✓✓✓✓✓
Ashdod	✓	✓	✓	Coastal	L4	✓✓✓	✓✓✓✓
Enkomi	✓	✓	✓	Coastal	C	✓✓✓✓✓✓	N/A

Note: Ugarit = Ras Shamra + Minet el-Beida. Legend: ✓=1-10; ✓✓= 11-50; ✓✓✓= 51-100; ✓✓✓✓= 101-500; ✓✓✓✓✓= 501–1000; ✓✓✓✓✓✓= > 1000.

Enkomi has been selected as a representative Cypriot site not only because of the quality of its excavation publications (Dikaios, 1969-71) but also due to the proximity of its location to the Levantine coast, with Ugarit only about 160 km (approximately one day's sail) away (see Map 2). While regional variations within the Levant are discussed in Chapter 3 (and Chapter 4 in the case of metals), the possibility of regional variation *within* Cyprus with respect to its external trade connections are explored in Chapter 5.

Bronze and its Component Metals

Chapter 4 reviews the textual, scientific and archaeological evidence to assess the degree of involvement of the different zones in the copper, tin and manufactured bronze trade, as well as the involvement inhabitants may have had in manufacturing bronze items and their access to these items. As many sites as possible in each zone have been included in this discussion, with the criteria for inclusion being the existence of one or more of the following:

1. The existence of texts documenting trade in metals;

2. Published excavated contexts with evidence of bronze working (bronze making, manufacturing bronze objects); or

3. The existence of scientific provenience studies on metal objects or ingots.

Table 2 lists the Levantine sites examined discussed in Chapter 4 and their criteria for inclusion. These sites are located on Map 10. This list simply reflects the evidence available for analysis and it is highly likely that urban metallurgy was more widespread than this and that new evidence will come to light in future excavations. What jumps out immediately is the small amount of evidence for LBA metalworking in Zone L4

urban centres during the LBA, despite its proximity to the Timna mining region, which was being worked under the auspices of New Kingdom Egypt at the time.

Table 2: Levantine Evidence Available for the LBA Copper and Tin Trade

Site	Zone	Bronze Working	Scientific Studies	Texts
Ugarit	L1	✓	✓	✓(✓)
Ras Ibn Hani	L1	✓	✓	
Emar	L1			✓
Alalakh	L1	✓		
Sarepta	L2	✓		
Kamid el-Loz	L2	✓	✓	
Tell Dan	L2	✓		(✓)
Hazor	L3	✓		(✓)
Pella	L3		✓	
Akko	L3	✓		
Tel Zeror	L3	✓		
Tel Nami	L3	✓		
Tell Beit Mirsim	L4	✓		
Tell el-'Ajjul	L4		✓	

(✓) = *Texts on metal consignments exist, but from MBA*

Evidence from the LBA urban centres of Cyprus will also be analysed, as will that from the Uluburun and Cape Gelidonya shipwrecks.

Methodological Approach

Imported Ceramics

Imported ceramics are found in many context types in the Levant and, given that the archaeological contexts in which objects are found (domestic, funerary, palatial and ritual) are likely to reflect their function and significance in that society, my analytical approach requires that only like context types be compared at different sites. This quantitative study concentrates on domestic contexts, where ordinary people lived and carried out their daily business, which has the virtue of giving an insight into the *general* availability of imported ceramics that is less likely to be influenced by élite preferences or ritual or funerary practices.

Absolute numbers of ceramic finds at individual sites reveal next to nothing about the access of inhabitants of these LBA polities to imported wares, as these numbers are strongly influenced by the size of the excavated contexts. To deal with this issue, the area of each context has been estimated (in square metres), and the number of imported ceramic finds per 100 square metres of comparable context calculated. This is, obviously, not a *true* measure of 'density', as the volume of fill removed per locus

would be a better basis for this. However, published data do not allow such a detailed exercise, and the term 'concentration' is used to describe the measure of ceramic finds per 100 square metres of horizontal exposure.

This methodology, described in detail in Chapter 3, is used to produce the raw material to which the lens of my theoretical perspective (summarised below and detailed in Chapter 2) can be applied in a second phase of analysis.

Bronze and its Component Metals

The analysis in Chapter 4 cannot follow the same quantitative path as taken with the ceramic record for two reasons. First, metals were, and are today, recycled. Secondly, the find contexts at sites such as Ugarit in which metals were found were either caches (where presumably valuables were hidden prior to inhabitants fleeing) or funerary contexts, rather than being representative of the daily use of these artefacts. The degree of preservation of bronze objects in domestic contexts, therefore, is unlikely to be comparable to the situation for imported ceramics.

Fortunately, whereas texts from this period do not document the trade in ceramics, they do deal with metals and the analysis presented in Chapter 4 is a synthesis of textual, archaeological and scientific data. Similar questions to those asked in Chapter 3 about the directness and intensity of trade between parts of the regional system are posed, as well as considering the diachronic evolution of the usage of bronze and the supply of its component metals.

Theoretical Model

The review of previous approaches to the analysis of trade in this geographic region and time period presented in Chapter 2 reveals that many of those relating to the Ancient Near East and the Levant have historically either been textually orientated, or analyses of archaeological data, but only rarely both. Very few recent studies centred in the northern Levant (such as Schloen, 2001 and Monroe, 2000) seek to integrate texts with archaeological material. In the southern Levant, Knapp's study of Bronze Age Pella in Jordan (Knapp, 1993) stands alone in attempting to set the site in its regional context using an *Annales* perspective, in which he integrates archaeological data with a broad temporal and geographical range of textual information.

Many older studies have concentrated on justifying Substantivist positions with regard to the political economy of Ugarit. This was based on Polanyi and his followers' belief that systems of exchange in the Ancient Near East were highly culturally specific (Polanyi, 1957) and the concept of accumulating capital (making money from buying and selling goods and providing services) was alien to this period. Until recently, most studies of Bronze Age trade have used texts to justify the existence of one type of economic model over another.

In my opinion, there is no reason to suppose that only one mode of exchange existed in the literate, urban societies of the LBA Eastern Mediterranean. This position is explored further in Chapter 2, which concludes that an archaeologically adapted world-systems perspective can produce a second level of analysis (of the results derived from the first stage of analysis of imported ceramics and metal objects summarised above) capable of revealing intra-regional variation in trading relationships within the LBA Levant. I demonstrate how this approach can draw out signals about the nature of LBA trade from the *"noise"* of vastly different ages and scales of excavation of key sites, differential availability of texts across the region and a lack of systematic scientific programmes throughout it.

World-systems approaches yielded some interesting insights during the 1990s. Andrew Sherratt (1993) has expanded the scope of world-systems thinking beyond the exchanges of bulk commodities encapsulated in Wallerstein's original work and examined interactions between a Near Eastern core and a European periphery between the Neolithic and the Iron Age. Chase-Dunn and Hall (1997) have also put forward a framework that allows a world-systems perspective to be used to compare world-systems. Their approach also accommodates ancient world-systems that have multiple cores and in which the periphery, far from being exploited, can play an important role in trade and other spheres of interaction (such as the military area). Others continue to criticise this methodology in detail (e.g. Stein, 1999) as having moved so far from Wallerstein's original conception that they have lost depth of insight. However, as Monroe (2000: 19) points out, even Stein admits the usefulness of world-systems thinking in a scenario where empires competed with each other, as was the case in the Eastern Mediterranean in the 14^{th} – 12^{th} centuries BC.

Specifically, I consider the analytical framework suggested by Chase-Dunn and Hall to be useful in formulating detailed questions to ask of the contextualised archaeological record of the urban societies of the Eastern Mediterranean in the LBA, especially when attempting to assess the nature and extent of interactions between the various polities and empires. Therefore, after the first stage of analysis has been conducted in Chapters 3 and 4 to identify any variations in the archaeological record between Zones L1-L4, the results are further subjected to questions derived from Chase-Dunn and Hall's approach to seek information on the likely nature and intensity of trading relationships and how direct or indirect they may be and how these may have evolved over time.

To date, adapted world-systems approaches such as those of Chase-Dunn and Hall and Andrew Sherratt have been based on large units of analysis - almost global in scale for the periods under consideration – when considering influences of different parts of the same system on each other. This thesis marries this large-scale approach to a sub-regional examination of excavation results to identify intra-regional variability of these relationships *within* the Levant. The objective of this is to build a more detailed opinion on how different parts of the Eastern Mediterranean system interacted with each other during the period of unprecedented levels of long-distance trade at the close of the LBA. It also assesses how enduring or otherwise these relationships were in the face of the instability that engulfed the region at the LBA's close.

Structure of the Discussion

Chapter 2 reviews the theoretical challenges in the field of trade and political economy in the Eastern Mediterranean in the late second millennium BC and the extant literature in this field. It singles out various issues for consideration, most notably, the problem in finding the source of tin that was an essential component of bronze and how this might have reached consumers in the Levant and Eastern Mediterranean.

Chapter 3, as already mentioned, contains a study of the imported ceramic evidence from the Levant and the conclusions that can be drawn about the directness and intensity of trading relationships between components of the East Mediterranean trading network based on this record.

Chapter 4 similarly assesses evidence for bronze industry and trade in metals from different parts of the Levant. It also integrates evidence for both long distance overland

caravan trade (for tin) and the maritime dimension of trade so vividly evidenced by the Uluburun and Cape Gelidonya shipwrecks. Textual and scientific evidence complement the archaeological record to produce as holistic a picture as possible and to provide a more nuanced understanding of the role of different parts of the Levant in these activities.

In light of the evidence presented in Chapters 3 and 4, Chapter 5 investigates the degree of continuity and change in the economic structures of different Levantine Zones between the LBA and the Early Iron Age. The possible role of connections between Phoenicia and Cyprus in this transition is examined, as well as considering regional differences within Cyprus itself.

In Chapter 6, I review the conclusions of the previous three chapters and discuss their implications for the understanding of LBA trade in the Eastern Mediterranean, what bearing this had on site survival across the LBA/Iron Age transition and how trading relationships evolved in the early part of the Iron Age. The integrated approach applied in this thesis, unsurprisingly, raises many new questions and these, as well as its predictive potential are discussed, especially in terms of how it might be used to influence research design of future excavations.

CHAPTER 2: LIMITATIONS OF PREVIOUS APPROACHES AND THEORETICAL PERSPECTIVE

Despite the focus archaeologists have given to the study of exchange over the past 40 years, few attempts have been made to synthesise trade and exchange on a regional scale in the northern Levant across the LBA/Iron Age transition. Regional-scale work has probably been hampered because these ancient city-states and empires lie within different countries today and, possibly equally importantly, within different compartments inside the discipline of archaeology. Moreover, the historically separate trajectories of archaeology and textual studies in the Ancient Near East have not helped this cause, with each group of scholars concentrating on their own area of expertise and tending not to incorporate the latest evidence or thinking from the other discipline. Last, when the focus of enquiry is broadened to include the Eastern Mediterranean as a whole, and the Aegean enters the equation, a major difference exists between approaches adopted by the scholars of the LBA and those who work on the early part of the Iron Age (the so-called Dark Age) and Classical Archaeology. Renfrew (2004) has described this as a *"chasm"* and both he and Snodgrass (2004) recently highlighted this issue as being one of the most pressing facing the discipline. Each of these senior scholars drew attention to the relatively small number of archaeologists working on both sides of this chronological disciplinary divide in the Aegean, a factor that militates against better understanding of how society and the economy restructured after the collapse of the Mycenaean palaces.

Nevertheless, considerable progress in the study of long-distance trade and political economy in the Eastern Mediterranean LBA has been made over the last twenty years. This is partly the result of new discoveries (such as the Uluburun and Point Iria shipwrecks), better survey and excavation methods as well as the more widespread application of scientific provenancing and dating techniques. In contrast to the Aegean, new textual material has continued to be found, translated and published in quantity at Ugarit. There is much greater synthesis of textual material with the archaeological record in the recent work of younger scholars such as Schloen (2001) and Monroe (2000), which represents a positive development towards a more holistic approach to the issue of trade. This contrasts favourably with the approach taken by previous generations of scholars who sought to match, sometimes ambiguous, translations of

texts with preconceived models of political economy originating from economic anthropology. In addition, texts have historically been used to prove archaeology, and vice versa, which has often led to circularity in arguments (Glock, 1983). Rather than using one to prove the other, a way forward is Glock's suggestion to analyse archaeological and textual evidence objectively and separately before synthesising them into a holistic approach (*ibid.*: 66):

"The search for historical reality is most successful when each, texts and archaeology alike, independently supports the other."

Before critiquing the literature on Eastern Mediterranean trade and political economy in detail, and analysing economic developments across the LBA/Iron Age transition specifically, it is necessary to provide some regional background. This includes current views on the agency (or agencies) that brought about the widespread destruction of sites at the close of the Bronze Age

Causes of the End of the LBA Order

Map 1 shows the locations of major settlements across the Eastern Mediterranean, including the Levantine sites discussed in this thesis, that were destroyed during the closing decades of the LBA. These are highlighted in red, while the pocket of unaffected sites in the region that became Phoenicia is shown in blue. With regard to the northern Levantine coastline generally, and Ugarit specifically, no clear consensus exists with regard to the agency, or agencies, that may have caused the destruction. The date of Ugarit's destruction cannot be dated precisely but a *terminus post quem* of 1194-1186 BC can be arrived at from a letter from the Egyptian Beya (a high official during the time of Siptah and Tewosret – see Figure 1) to Ammurapi, the last king of Ugarit (Singer, 1999: 715).

An earlier generation of archaeologists, notably Claude Schaeffer – the first director of excavations at Ugarit – favoured an earthquake hypothesis (Schaeffer, 1968). This view was based on a text that suggested that Ugarit might have been friendly towards the *Sea Peoples* (Drews, 1993: 33-34), but this has been disproved by subsequent scholarship. The presence of arrowheads in the destruction layer at Ugarit is concrete evidence of a violent destruction (Yon, 1992). Recent literature concentrates on three main categories of explanation:

1. Population movement, or mass dislocation of peoples by sea (and land) possibly including elements from the Mycenaean world;

2. Internal systems breakdown within individual city-states; and

3. Changes in the technology of warfare (raiders having superior weapons of European design).

Explanations based on climate change have become unfashionable (as they are considered to be too environmentally deterministic) and are ignored nowadays by most commentators. The evidence for climate change does, in my view, warrant consideration insofar as it may have triggered population movements from certain parts of the Eastern Mediterranean to less affected areas and the current state of knowledge is reviewed briefly under the heading of population movement theories.

Population movement theories

For over 100 years, the migration of the *Sea Peoples* has been the most popular theory for what caused the LBA collapse. The cause of the migration of these peoples has sometimes been attributed to drought, and the destruction wrought by them throughout the Eastern Mediterranean and inland in Anatolia has been seen as the work of peoples dislocated from their original homelands who were moving in search of new areas in which to settle. The basis for the migration theory appears to be the Merenptah inscriptions in the Temple of Karnak in Luxor (Drews, 1993: 48-61) and is based on the interpretation of Gaston Maspero in the 1870s, formulated after the discovery of destruction levels at Ugarit and many other Levantine sites, Mycenae, Tiryns, Pylos, Knossos and Hattusa (*ibid.*: 54).

As already mentioned, one possible motivation for mass movement of groups of people would be adverse climatic conditions in parts of the Eastern Mediterranean region. Several episodes of climate change have been associated with societal collapse, both in the Old World and the New (Mayewski et al., 2004; Thompson, 2003). Although temperature changes often attract the most interest in climate records, within the scope of archaeological time, changes in precipitation levels have been the most important natural phenomenon with which humans have had to contend (MacDougall, 2004: 213). In the Old World Bronze Age, the Akkadian Empire of Mesopotamia, Old Kingdom Egypt, EBIII Palestine, Greece and Crete all appear to have reached an

economic peak at about 2300 BC before collapsing a century or so later as a consequence of widespread drought affecting the region from the Aegean to the Indus (Weiss and Bradley, 2001). Such a catastrophic and widespread drought appears to have been unlikely a millennium later, in the period that concerns us here, but drought may have affected *some* of the areas that were engaged in the Eastern Mediterranean trade network and caused people to move from affected areas in search of better living conditions.

Barry Weiss (1982), following Bryson et al. (1974), states that study of Eastern Mediterranean rainfall patterns show that Greece and Turkey are on the borderline between excess and deficit under normal circumstances. Because of this, these countries can be expected to be particularly sensitive to changes in global weather circulation patterns. These analyses depend on extrapolating ancient conditions from modern weather observations and seeing whether simulations can be produced that fit with other sources of archaeological and historical data.

Obviously, this is not conclusive proof, and more direct physical evidence from, for example dendrochronology or lake sediment cores, would be required to settle the matter. Thompson (2003) draws attention to significant periods of low Mesopotamian rainfall, (measured by sediment layers and pollen species in cores from Lakes Van and Zeribar) occurring in c. 3200-2900, 2350-2000, and 1300-1200 BC. Baillie (1998) has presented dendrochronological data which show a narrow tree ring event (indicative of poor growing conditions) in the period 1159-41 BC – which is somewhat later than the events being discussed here. The amount of work that has been done on the LBA/Iron Age transitional period is far less than that for the end of the Early Bronze Age (EBA) event already mentioned, or the end of the Middle Bronze Age (MBA)/Egyptian Middle Kingdom (which has a narrow tree ring event c. 1628 BC (*ibid.*) that may be connected with the eruption of Thera – see Manning, 1999 for full discussion).

A recent paper on Holocene climate variability (Mayewski et al., 2004) charts a number of episodes of rapid climate change from observations around the world. Among these are measurements of species of microfossils (foraminifera) that are diagnostic of sea surface temperature in core samples taken from the southeast Aegean (the original work having been published by Rohling et al., 2002). These data show a cooling event that affects the Aegean specifically (which lacks the inertia of larger seas and responds

more directly to climatic events in high latitudes i.e. in the Arctic region). This event reaches its coldest point in about 3200 Before Present (BP) and spans the period from approximately 3500-3000 BP (Mayewski et al. 2004: Figure 1(m)). The coldest point in this event would, therefore, broadly correspond to the timing of the fall of the Mycenaean palaces, that of the Hittite Empire and the widespread destructions at the end of the LBA in the Eastern Mediterranean region as a whole.

If anything, therefore, the scientific evidence seems to be beginning to accumulate for an Aegean-specific (rather than Mediterranean-wide) climatic phenomenon during the right period. In terms of direct evidence, however, it remains an open question whether drought affecting more marginal land in coastal Greece and Turkey might have caused groups of people to move in search of better conditions.

Turning to what knowledge people had of other lands around the Eastern Mediterranean that would give them confidence to seek new homelands in times of adversity, Knapp (1998: 196), building on Broodbank's (1993) earlier work on distance, knowledge of the *"other"* and power, discusses the need to view maritime ventures in terms of the conception of ancient peoples of what lay beyond their immediate experience. Knapp's article does not explore how such conceptions may have changed over time as the level of trade grew during the LBA and the frequency of contact must, consequently, have increased between participants from different parts of the Eastern Mediterranean. It would seem logical to suggest that more individuals would know something about what lay beyond the horizon by the end of the LBA than in earlier periods of the Bronze Age.

Yasur-Landau (personal communication, May 2004) has suggested that Levantine merchants engaged in trade with the Aegean at the close of the LBA might have provided information on good places to settle or raid along the Levant coast. He suggests an analogy with the local informants that acted as guides for colonists in the case of the Americas in the 16th century AD.

Internal systems breakdown theories

Catastrophe theory, originating in mathematics, has been used in archaeology as an explanatory tool for the collapse of societies. This theory is built on the view that an accumulation of minor factors can result in dramatic and sudden reversals of fortune (Dark, 1998: 65). Zaccagnini (1990) and Liverani (1987) have put forward internal

systems breakdown theories as explanations of the fate of Ugarit at the close of the LBA. These concentrate on the internal issues facing the kingdom of Ugarit and see the arrival of the *Sea Peoples* as the straw that broke the camel's back in a city-state that was already straining under internal pressures. That Ugarit was not rebuilt is seen as testimony of a society that was already in structural decline (Drews, 1993: 87). Several potential triggers for the internal stress have been identified. These are broadly grouped into environmental, socio-political and economic factors. Drews (*ibid.*: 85-90) cites drought, plague and shrinkage of arable land as potential regional explanations for the crisis, while an increase in nomadism, defection of mercenaries and peasant revolts are among socio-political factors possibly driving decline. Zaccagnini (1990) sees the disruption of maritime trade routes at the close of the LBA (curtailing supplies of copper and tin) as a major issue. This is not borne out by the archaeological evidence (Pickles, 1988; Pickles and Peltenburg, 1998; S. Sherratt, 2000). In the case of copper, the Cape Gelidonya wreck, dating to c. 1200 BC, contained just less than one ton of copper (see Table 17). In the case of tin, Pickles (1988) and Pickles and Peltenburg (1998) have demonstrated that high tin bronzes were still being produced at the close of the LBA.

More than anything, the rich textual archives recovered from Ugarit in recent years, which are discussed later in this chapter, do not paint a picture of a failing society in economic decline, but that of a thriving port city with many international contacts handling diverse cargoes of strategic and luxury goods. This is also consistent with the material culture of the destruction horizon: in short, at the moment of its destruction, Ugarit was rich and flourishing, not decadent and impoverished (Yon, 1992).

Changes in warfare

Robert Drews has argued (1993, Chapters 10-12) that warfare in the Eastern Mediterranean kingdoms from the late seventeenth to the late thirteenth centuries BC consisted of engagements between rival chariot forces. Infantrymen played a supporting role by following the chariot attack and despatching fallen enemies from the chariot battle, rather than to engage opposing infantries in formation. Drews believes that the perpetrators of the sackings of cities during the end LBA destructions were infantrymen that arrived by ship, who needed to be countered by other infantry. He cites the Medinet Habu inscriptions as evidence of greater prominence of the Egyptian infantry in the

battle against the Peleset (Philistines) in c. 1179 BC compared with earlier inscriptions related to the battles of Merenptah. The latter appears to have relied on chariots to defeat the Libyans in the battle of c. 1208 BC. Indeed, Drews attributes Ramesses III's success in his land battle against the Philistines to his recruitment of trained infantry, including auxiliaries from another group of *Sea Peoples*, the Shardana, depicted using swords and thrusting spears. The Hittites and the city-states of several parts of the Levant appear to have been less successful in this regard, if Ramesses III is to be believed. Drews gives evidence for revolutionary changes in weaponry and armour in the decades before and after 1200 BC, particularly the introduction of the slashing sword from Europe.

All three theories have appealing components that fit parts of the archaeological and textual evidence. Perhaps the cause varied across the region or, indeed, a number of factors may have been at play in each specific situation. An unexplored theoretical avenue that has the potential to shed light on the causes of the end of the LBA in the Eastern Mediterranean comes from mathematical research via the study of international relations. Scholars of the latter engaged in the study of long-term change have increasingly included approaches that originate from mathematics in recent years. Some of these have also made their way, at least conceptually, into archaeology. An example of this would be catastrophe theory (mentioned in connection with internal systems collapse hypotheses discussed above in the case of Ugarit).

More recently, the use of complexity theory has spread from mathematics into the discipline of international relations, in which it has been used to build explanations of long-term change in complex systems. Complexity theory is an extension of another mathematical theory, namely that of chaos (which explains how complex and unpredictable results can be generated from relatively simple mathematical equations within physical systems) (Dark, 1998: 65). Building on the tenets of chaos theory, complexity theory in the social sciences can accommodate a human dimension, namely that outcomes may be affected by individual experience and expectations (Sayer, 2000: 13-16).

The trading networks of the Eastern Mediterranean and Ancient Near East would certainly be examples of complex systems to which this theory could be applied. Dark (1998: 65) characterises complex systems as being large, intricate, capable of

generating outcomes that are not simply the sum of their parts and having a capacity to store and recall information. Mathematical modelling done on such systems also shows that they tend to become more complex over time (if no other constraints are put upon them) (*ibid.*: 106). Another facet of complex systems which has been explained by complexity theory is that, as systems become more complex, and the degree of interdependence between their constituent parts grows, keeping the overall system stable becomes more difficult. This property of complex systems is called hypercoherence (*ibid.*: 120), and its consequence is that the system decomposes into smaller entities. Furthermore, complex systems also have the capacity to self-organise. In other words they may change morphologically as a result of processes that are independent of agency (for example overarching imperial direction), although agents both initiate these systems and to enact them (*ibid.*: 106). This self-organising tendency, termed emergence, relies on a sufficient number of interactions taking place between individuals such that problem solving and self-regulation is efficient within a complex system (Johnson, 2001: 77-79).

This promising theoretical approach, therefore, raises the possibility to explain how interrelationships between parts of a complex system affect the overall morphology of the system and how this evolves over time. So far, however, few attempts have been made to apply complexity theory within archaeology as a whole. Dark (1998: 58) cites Flannery's 1960s articulation on the hypercoherent behaviour of socio-economic systems based on his work in Mesoamerica. This was almost ten years before complexity theory proved mathematically that complex systems could behave in this way (*ibid.*). Otherwise, Bintliff (1997) is a rare example of the application of this theory in recent archaeology. I am not aware of any such studies on the transition between the LBA and the Iron Age in the Eastern Mediterranean either in search of an explanatory model for the cause of the collapse or for the restructuring that ensued within the regional economy.

Presence or Absence of Resident *Sea Peoples* Post Destruction

The Levantine littoral does not present a consistent picture along its length with respect to evidence of the presence of new ethnic groups post the end-LBA destruction horizon. The extent of archaeological excavations in the four zones also varies widely, with modern Israel (broadly contained in Zones L3 and L4) being more thoroughly explored

than Syria (broadly Zone L1) which, in turn, is better explored than modern Lebanon (broadly Zone L2). In the latter, excavations have only recently been resumed after the hiatus caused by the civil war. The comments that follow must, therefore, be treated as being provisional and potentially subject to change as new excavations begin to produce results, particularly in coastal Lebanon.

There is no conclusive proof for large and enduring *Sea Peoples'* settlements in the coastal Levant other than in Zone L4 (Philistia). In terms of the evidence from Syria (Zone L1), the impact of the *Sea Peoples* seems to be limited to being the opportunist agents of destruction, although both Ras Ibn Hani and Tell Sukas are reoccupied after their destruction and Mycenaean IIIC pottery (historically considered to be diagnostic of the arrival of new peoples in the Levant) appears there. No petrographic studies have been published, but some of this material is stylistically similar to LH IIIC wares found on Cyprus by this time. The evidence for a *Sea Peoples'* settlement at Ras Ibn Hani, for example, solely rests on the recovery of Mycenaean IIIC ceramics in the rebuilt settlement there. In any event, the proportion of these wares within the total ceramic assemblage of this period is far lower than that of imported LH IIIB wares in the pre-destruction layers (Caubet, 1992). Moreover, the re-settlement of Ras Ibn Hani was a short-lived phenomenon, and the site was abandoned by the end of the 12th century BC (*ibid.*). The picture is similar at Ras el Bassit to the north of Ugarit, at which Mycenaean IIIC wares were recovered. In this case, however, no reconstruction can be correlated to the appearance of these wares, which resemble typologically those found in neighbouring Cilicia (*ibid.*).

As is discussed in Chapters 3 and 5, LH IIIC pottery is also found at Sarepta in Zone L2, but also appears to be of Cypriot origin, rather than locally made (Warren and Hankey, 1989: 163). The Sarepta architectural evidence shows a smooth transition from the LBA to the Iron Age and its excavators could see no evidence of intrusive population elements. Koehl (1985: 146) stated that there is no evidence on the Phoenician coast for *"Mycenaean"* settlements, and this remains the case to this day.

On the other hand, the Carmel Coast (in Zone L3) is associated with *Sea Peoples* in textual sources. Specifically Tel Dor is mentioned as a Sikila settlement in the Egyptian Wen-Amon Papyrus (Gilboa, 2004). The Sikila are also sometimes referred to as Tjekker in the Egyptian records (Stieglitz, 1990). Stern, the excavator of Dor, believes

that the Sikila and Shardana invaded the Carmel Coast and Akko Plain (see Dothan, 1986 regarding Shardana at Akko) but that by the mid-11th century BC, the region (including Tell Abu Hawam and Tel Keisan) had become affiliated with Phoenicia, possibly by conquest (Gilboa, 2004).

In contrast to this lack of consensus in the north, the coastal part of Zone L4 in the southern Levant contains multifaceted archaeological evidence for what Barako (2000: 513) calls a

"... hostile invasion by a migrating people bearing a distinctive new material culture."

In other words architecture, and burial customs changed in Philistia, along with diet (Hesse, 1990).

Stager (2004) has recently revealed new evidence from his excavations at Ashkelon that shows architectural, dietary and technical changes during the earliest Iron Age Philistine settlement of the site. As evidence for new ethnic peoples (in addition to finewares clearly derived from an Aegean cultural tradition), Stager cites the presence of both loom weights and one handled cooking jugs of Aegean-type as well as circular hearths (another Aegean cultural correlate). Animal remains from Ashkelon have also been examined in 13-11th century BC strata. Pig bones amounted to 4% of the assemblage in Canaanite (LBA) Ashkelon; in Stratum 20 (the first *Sea Peoples* phase) this increases five fold to 20% (*ibid.*). Stager, therefore believes that there is conclusive evidence for an influx of new people and a Philistine Monochrome (also termed Mycenaean IIIC: 1) bowl found in a stratified deposit with a scarab of Ramesses III (that was very worn) suggests that the earliest Philistine horizon at Ashkelon might date to the first quarter of the 12th century BC, and certainly to the first half.

Likewise, Dothan and Zuckerman (2004) in a paper analysing Mycenaean IIIC: 1 (Philistine Monochrome in Stager's terminology) from Ashdod and Tel Miqne (Ekron) in Philistia are convinced of the existence of new intrusive population elements in the earliest Iron Age levels. This is contra the arguments put forward by Susan Sherratt (1998) and Bauer (1998) that these wares may be indicative of import substitution, rather than ethnic movement. Both Stager (2004) and Trude Dothan (Dothan and Zuckerman, 2004) are adamant that the Early Iron Age archaeological evidence supports a Philistine settlement comprised of a new ethnic group, however.

The distinct material culture of the Philistines may have been used initially to negotiate competing interests and cultural identity of the recently settled group with regard to their neighbours, both Canaanite and Egyptian (Bunimovitz and Faust, 2001). Killebrew (2003: 122) has pointed out that the socio-economic and political situation at this time was

"...ripe for the delineation of social boundaries based on allegiances...".

Over time, these settlers become less distinct in their material culture.

Gilboa (2004) has suggested that the visibility of new intrusive elements in the archaeological record depends, not only on the number of people involved but also on the nature of the social and economic structure of the region in which they settled. The maintenance of the distinctness of the Philistine culture over two centuries, therefore, probably reflects both significant numbers of newcomers and the relative weakness of Egypto-Canaan in Ramesses III's time, which culminated in the withdrawal of the Egyptians from the southern Levant in the mid to late-12th century BC (*ibid.*; Weinstein, 1992; Finkelstein, 2000). Sikila and Shardana arriving on the northern coast of Zone L3 may have faced a very different, and much more stable, economic and political situation. Being so close to the undamaged Phoenician cities to the north in Zone L2, which had been outside Egyptian influence for some decades (S. Sherratt, 2003a), may have meant that it was inadvisable for, possibly small, intrusive groups to assert their separate cultural identity too strongly in this region (Gilboa, 2004). Consequently, their cultural footprint in the archaeological record is small, and open to question (see Chapter 5).

Conclusions about the Causes of the Catastrophe

Evidence for the arrival of initially hostile new intrusive population elements is far from uniform along the length of the Levant coast. In the case of Syria generally, and Ugarit specifically, scholars such as Liverani and Zaccagnini have given greater prominence to the internal systems collapse theory, which does not sit well with either the archaeological evidence, or the increasing corpus of textual finds that document the commercial activities of Ugarit's leading merchants during its last years. That so many cities were successfully sacked, however, may lend support to Drews' position that the invaders may have changed the rules of the game with respect to warfare. He believes

that these invaders may have defeated defending forces using more effective infantry weapons that were not widespread in the Eastern Mediterranean hitherto. Other than in Philistia, there is no evidence of long duration settlements of intrusive population elements maintaining a distinct way of life. If Shardana and Sikila did settle on the Carmel Coast, and this is by no means certain, their grip on the territory appears to disappear by the mid-11th century BC, when Phoenicia's influence spreads south to these settlements.

As Jared Diamond (2005: 15) has recently pointed out, economic and military factors alone are capable of triggering societal collapse (for example the final destruction of Carthage by the Romans in 146 BC or the more recent collapse of the Soviet Union), but often, ancient collapses do involve climate and environmental triggers. Further research into climate-driven triggers for population movements in this specific period, as well as the application of complexity theory, have the potential to shed further light on the events at that brought about the end of the LBA in the Eastern Mediterranean.

The Textual Record of Ugarit and its Correspondents

Ugarit's textual record is particularly rich, being the largest and most diverse archive between Hattusa and Amarna (Singer, 1999: 603). *Ras Shamra-Ougarit V* (in two volumes) (Bordreuil and Pardee, 1989) documents the texts found up to 1988. These comprise of approximately 1800 syllabically written texts (mainly in Akkadian and Sumerian, but also including Hittite and Hurrian) and more than 1900 texts written in alphabetic Ugaritic (a North West Semitic language) (Schloen, 2001: 206). The site has continued to yield major textual finds, the most recent of which being those from the House of Urtenu in the Sud-Centre part of the tell (Bordreuil and Malbran-Labat, 1995). Initially, a chance find was made in 1973 during the construction of a Syrian army bunker and eventually permission was granted to commence excavations in 1986. Some of the early finds were published in *Ras Shamra-Ougarit VII* (Bordreuil et al., 1991), but several hundred more tablets were found in the 1994 excavation season, of which only a few have been published. These finds are discussed in more detail in Chapter 4, where the involvement of Urtenu in the metal trade is considered. Many of these related to trade and contact with merchants in the Levant but most remarkable of all were four Akkadian texts from Alashiya (Cyprus), more than doubling the known corpus (Malbran-Labat, 1999; Yon 1999).

About 130 tablets have also been found at the neighbouring palace site of Ras Ibn Hani, the majority of which are written in Ugaritic (Bounni et al., 1998: 91) and are principally concerned with the administration of this outpost of Ugarit that was known as Biruti at the time.

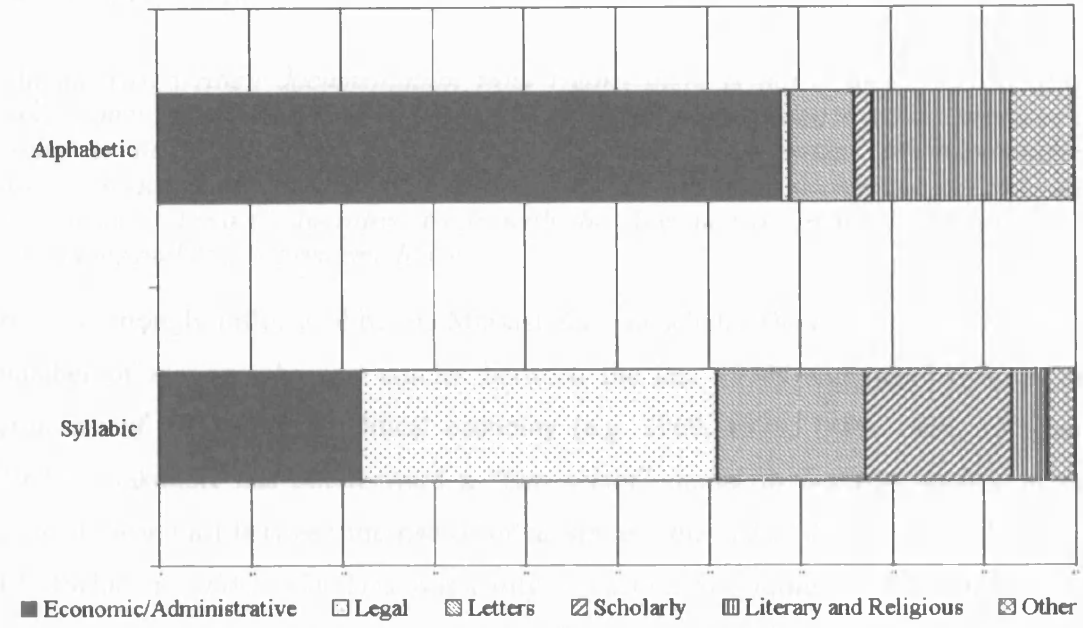
A word must be said at this point about Cypro-Minoan inscriptions found in Ugarit, which is the only city outside Cyprus in which Cypro-Minoan tablets have been found. This script has not been deciphered and, as the known corpus of inscriptions is small, this is unlikely to change in the near future unless a major archive with a bilingual inscription is found. The *only* two cities at which Cypro-Minoan tablets have been found are Enkomi and Ugarit which, stating the obvious, means that none have been found elsewhere on the island. This makes the Ugarit finds even more important. Furthermore, only nine Cypro-Minoan tablets are known in total, of which five hail from Enkomi and four from Ugarit (Ferrara, 2004). Their find contexts at Ugarit are discussed in more detail in Chapter 4 but in three cases they come from stratified deposits inside the houses of great merchants with the fourth being a surface find close to another merchant's house. Given their find-spots in Ugarit, and the fact that documentary evidence exists that proves that each of these four merchants was engaged in trading metals, there is a possibility that these tablets might be associated with the copper trade of Cyprus, or even the on-shipment of tin thereto from Ugarit – if only we could read them.

Ugaritic is considerably less well understood than Akkadian and consequently Singer (1999: 605) counsels against making

"... far reaching interpretations based solely on Ugaritic texts unless they are corroborated by more reliable Akkadian ones."

Schloen (2001: 206) has made an analysis of the subject matter of the texts written in syllabic script (mainly Akkadian and Sumerian, but with a few examples in Hittite and Hurrian) and alphabetic Ugaritic, which is summarised in Figure 3.

Figure 3: Subject Matter of Syllabic and Alphabetic Texts at Ugarit



Source: Data from Schloen, 2001: 206.

The tablets span the period from the absorption of Ugarit into the Hittite Empire (c. 1340 BC) and end at the destruction of Ugarit (c. 1185 BC) (see Figure 1). According to Schloen (*ibid.*), there is evidence to suggest that the majority of the tablets relate to a much shorter period, perhaps the last 50 years of the history of the city. This would be logical, as there would seem to be little reason systematically to keep administrative records for long periods of time.

As Schloen comments (*ibid.*: 207), analysis of these archives has concentrated more on the literary, religious and mythological texts, at the expense of those that can tell us about the economic organisation of Ugarit in its last few decades. The notable exceptions to this rule are of the work of Michael Heltzer and Mario Liverani. These two scholars have each put forward a model for Ugaritic political economy in which a private sector sits alongside a palace-controlled sector. A general criticism of their work is that it has refrained from integrating the archaeological data into models generated through textual study (Schloen, 2001: 208).

Although Ugarit's texts attest commercial relationships with many areas (including Egypt, Cyprus/Alashiya, Byblos, Tyre, and Akko) only one possible reference exists to the Aegean (Heltzer, 1978: 134). Moreover, there is not a single record of an Aegean

merchant trading in Ugarit, which Singer believes cannot be simply an oversight (Singer, 1999: 676).

"In the vast written documentation from Ugarit there is not a single record of an Aegean merchant trading in the city... Juxtaposed with the evidence for the presence of countless other foreigners in Ugarit – Egyptians, Canaanites, 'Mesopotamians', Alašiotes, not to mention Hittites – this absence can hardly be accidental and indicates that most of Ugarit's lucrative trade with the Aegean was in the hands of Syrian merchants and Cypriot intermediaries."

Heltzer, strongly influenced by the Marxist Russian scholar Diakonoff, has published a number of monographs and articles between the late 1950s and late 1990s on the structure of the Ugaritic political economy (e.g. 1969, 1978, 1979, 1984, 1996 and 1999). Diakonoff has put forward a "two sector" model to describe society in the ancient Near East between the rise of urbanism and the end of the second millennium BC (Schloen, 2001: 187). This was partly a reaction to traditional Marxism, with its emphasis on slavery, and concepts based on feudalism in Mediaeval Europe. According to Schloen, early scholarship by scholars including Alt, Gray, Boyer and Rainey on the economy and society of Ugarit during the 1950s and 1960s was derived from this European models of feudalism (Schloen, 2001: 188). Diakonoff's model strongly resembles the older Marxist concept of *Asiatic Mode of Production*, which emphasises the rural-urban dichotomies in early societies.

Heltzer (1969, 1976, 1982, 1996) has used textual evidence about a class of free citizens in Ugarit (separate from royal dependents) to propose a two-sector model. The justification of this model is mainly based on RS 17.238 (e.g. Heltzer, 1969: 35), a decree of the Hittite king Hattusili III (who is shown as Hattusili II in Figure 1 due to the questionable existence of an earlier Hattusili II who may have reigned after Arnuwanda I – see Bryce, 2002: xi). This interpretation is not universally accepted, however. For example, Schloen (2001: 222) suggests that the tablet can also be interpreted as referring to different members of the King of Ugarit's household, rather than royal dependents and free citizens.

While he agrees with many of Heltzer's textual interpretations, Liverani has taken the analysis further by exploring demographic and economic issues. Like Halstead's (1992) interpretation of the Mycenaean palatial economy (which is discussed later in this chapter), Liverani believes that, at first, the palace controlled what Marxists refer to as

the means of production and long-distance trade. Meanwhile, a private, rural sector supplied agricultural produce, taxes and services. (Fine, 1997). As discussed earlier in this chapter, Liverani sees the disparity between the royal and rural sectors increasing over time such that when crisis strikes, in the form of the arrival of the *Sea Peoples* (Liverani, 1987: 69)

"...the royal palace could not rely upon the (mainly economic) support of the villages, too crudely exploited in the past, or that of the aristocracy (mainly military)."

Heltzer and Liverani's functionalist, bureaucratic "two sector" model for Ugarit has become the conventional wisdom for many scholars in recent years. Schloen (2001: 194) attributes this to

"... the continuing influence of the positivist-functionalist socio-historical paradigm in ancient studies."

However, Schloen himself (2001: 51) outlines the case (both archaeological and textual) for a Patrimonial Household Model (PHM), based on the concept originally formulated by Max Weber (1978 – originally published in German in 1922). This model envisages a social system that is an extension of the ruler's household, within which there exists hierarchy of households linked by kinship ties. Agriculture is practiced by these households on inherited land and such a model neither calls for private/public nor urban/rural distinctions.

In addition to citing the importance (and longevity) of the use of certain household terms in the Bronze Age Near East (*house, father, son, brother, master* and *servant*), Schloen integrates the archaeological record of Ugarit into his discussion by examining the work done by Callot (1994) on the household architecture and organisation of the Ville Sud area (Schloen, 2001: 317-347). Perhaps the most convincing archaeological evidence in favour of the PHM are the intra-mural tombs common at Ugarit (*ibid.*: 346):

"The use of intramural tombs at Ugarit and the ancestor cult that went with it reflects a strong belief in the importance and temporal continuity of the household and its physical patrimony."

Monroe (2000: 121), however, has characterised Schloen's PHM as

"... a one sector model where the king owned everything."

When the private archives of Ugarit are examined in detail, as Monroe (2000) does in his doctoral dissertation, it becomes clear that Schloen's PHM does not acknowledge that a large body of evidence for trade exists outside palace control (*ibid.*: 186), whose existence is inconsistent with, and does not conform to, a PHM of the economy of Ugarit. Schloen, rather, presents all merchants as palace dependents, rather than independent entrepreneurs (*ibid.*: 173). The entrepreneurial activities of some of Ugarit's wealthiest merchants are discussed in Chapter 4, when their involvement in the metal trade is considered.

Liverani continues to characterise Bronze Age trade as being run and financed by the palace. He describes the how Bronze Age trade functioned as follows (Liverani 1997: 562):

"... Bronze age trade was basically run by the palace organization, financed by the palace and aiming at getting materials unavailable inside the country... ".

Likewise, Sherratt and Sherratt (2001: 21) see the acquisition of high value raw materials as a key determinant of the structure of Bronze Age economies, and their potential for growth.

Speaking of the Iron Age, Liverani sees a step change in the independence of merchants (1997: 562):

"Merchants, formerly palace dependants, are now acting by themselves... ".

In essence, Liverani's perception is that trading shifts from being an administered process during the LBA to an entrepreneurial one in the Iron Age (2003). Sherratt and Sherratt (2001) see this process as one of privatisation, with a structural shift in who carried on the trade (i.e. private enterprise rather than the state). Liverani's analysis (1997, 2001 and 2003) has tended to focus on the difference between royal Bronze Age merchants and those that are acting independently in Iron Age after the collapse of the palaces, rather than how the role of such traders may have evolved during the LBA. However, this position has recently softened (e.g. 2003: 124) and he now has a stance that is more consistent with the evidence from Ugarit, namely that royal traders could have mixed both state and private transactions as well as executing these on both a ceremonial and a

Given the formalisation of business scholarship over the last four decades, it is perhaps surprising that scholars at Business Schools have not taken a more active role in tracing the origins of entrepreneurial trade. The first substantial work to appear from this quarter is Moore and Lewis (1999), which considers the birth of multinational enterprises. They place this event in the MBA Old Assyrian Kingdom and the well-documented example of the Karum at Kültepe is examined, before tracing business history to Roman times. Although this is a book written from a very different perspective it, unfortunately, does not introduce any new theoretical or predictive perspectives that might prove useful in archaeology. Consequently, the search for a theoretical framework for this thesis must begin elsewhere.

Economic Anthropology and the Substantivist/Formalist Impasse

Adams, in an immensely influential paper published in 1974, made it clear that the advent of new analytical techniques were a necessary, but not sufficient, condition to generate real advancement in the study of trade. He called for a broadening of the conceptual base of interpretation within archaeology and a greater awareness of research paradigms employed in the study of trade in the ethnographic and ethnohistoric fields within anthropology.

The concepts of reciprocity, redistribution and market exchange and investigations of the concept of "value" are legacies of early economic anthropological work. In tracing the emergence of the influence of economic anthropology on archaeological theory and method in the study of exchange, all roads lead back to Bronislaw Malinowski's work, published in "Argonauts of the Western Pacific" in 1922. This research was conducted in the Trobriand Islands, located to the east of New Guinea, over a period approximately coinciding with the First World War. He studied the concept of *kula* - a system of reciprocal exchange involving the circulation of valuables, in a non-commercial way, between male actors from tribes in the archipelago, accompanied by ritual and magic. Malinowski's methodology not only described the processes of exchange, but also integrated the motives of the participants and their emotions in the context of the power of magic in their society, its mythology and its folklore.

Hard on the heels of Malinowski's work, and drawing from it, another deeply influential work, *Essai sur la don (The Gift)*, was published in 1925 by Marcel Mauss. This book discusses the meaning of exchange customs of native North-Western Americans, Melanesians and those in the early phases of historical civilisations. Mauss concludes that by giving something, the giver makes the receiver indebted to him and that social ties (and, indeed, peaceful co-existence) arise from reciprocal exchange. This, rather than economic gain, is the motivation for, and benefit of, reciprocal exchange.

Historically, two models of political economy have dominated the study of ancient states, namely those derived from Formalist and Substantivist schools of economic anthropology. Formalists believe that rational decision-making takes place with respect to cost minimisation when a society is faced with a choice of, for example, food resources or settlement location (Earle, 1982). They further assume that wealth maximisation strategies have been adopted by human societies in open market settings throughout history (Monroe, 2000: 6).

However, Malinowski's work highlighted the difficulty of trying to understand ethnic economies in terms of Western capitalism. In other words, systems of exchange are highly culturally specific and there is no merit in applying today's market-driven norms in attempts to understand them. This concept later developed into Substantivist economics and was expanded significantly by Karl Polanyi and his associates from the 1940s onwards (e.g. Polanyi, 1957).

Substantivists believe strongly that markets played no part in economic life before industrialisation and that, even when market places were present in past societies, they were not the main focus of economic activity. The supposed absence of evidence for market places, capitalists and money from both the archaeological and textual records made Formalism an easy target for Polanyi and his work focused only on reciprocity and redistribution in ancient societies.

Polanyi took a great interest in the ancient Near East and included studies of this area in his 1957 book *"Trade and Market in the Early Empires"*. This book was largely responsible for introducing American anthropology to a functionalist perspective that exchange was organisationally embedded in the institutions of a society. He believed that his analysis demonstrated that the economics of ancient and primitive societies

were totally inconsistent with the 20th century market-oriented perspective of the Formalists, and that temples and palaces controlled the economies of the Near Eastern Bronze Age.

Through the work of Finley (e.g. 1981), Polanyi's shadow extended to the Mycenaean Palaces, which he viewed as redistributive centres for which long-distance trade was unimportant (Van Wijngaarden, 2002: 24). Finley firmly believed that the small amount of long-distance trade that quite evidently did take place was controlled by the palace via diplomatic gifts (*ibid.*).

Critiques of Substantivism and its Origins

Substantivism, however, does not fully fit the evidence from the literate societies of the LBA Near East any more than Formalism does. Gledhill and Larsen (1982) critiqued the influence of Polanyi on Near Eastern Studies by pointing out that his claim that markets never existed in Mesopotamia does not stand up to scrutiny. Absence of excavated large market places proves nothing, not least because such a public space is not a pre-requisite for a price-driven market economy. One need only think of the *suqs* of North Africa or the Levant to appreciate this point. In addition, Polanyi's claim that there was no word for marketplace in Akkadian has been found to be erroneous and there is now evidence of marketplaces in the Near East in which money transactions took place during this period.

Moreover, according to Gledhill and Larsen, Polanyi's illustration of risk-free, market-less trade (the well-documented example of the trade between Aššur and Kaneš or Kültepe in the Old Assyrian period) does not conform to his exclusively redistributive model. There is substantial textual evidence of price fluctuations in specific market situations; goods are expensive when they are in short supply. Thus they conclude that Polanyi's special emphasis on the redistributive aspects of Mesopotamian society obscures the important role played by the private sector (in this case merchant families).

For decades there was an implicit acceptance of Polanyi's Substantivist paradigm among the vast majority of scholars studying the Mycenaean economy (Sjöberg, 1995). The most recent studies, however, suggest that this is changing (e.g. Galaty and Parkinson, 1999). Moreover, the large quantity of Mycenaean ceramics found both in the Eastern and Central Mediterranean, together with the absence of these goods from

the textual records, limit the usefulness of Substantivism in analysing this aspect of Mycenaean trade (Van Wijngaarden, 2002: 24).

Although Malinowsi continues to have many adherents in contemporary archaeological thought about trade, it appears that anthropology has moved on from such devotion. Specifically, it appears that Malinowski's documentation of the *kula* exchange was only partial (Appadurai, 1986: 18). In 1971, Annette Weiner went to Kiriwina, the island in the Trobiand group on which Malinowski had carried out his pioneering study, to carry out field work as a graduate student. Out of this research came her book *"Women of Value, Men of Renown"* published in 1976, which contained a significant critique of Malinowski's work that highlighted the role of women in Trobriand exchange. This had previously been largely ignored, both by Malinowski and by H.A. Powell (who had worked on the same island in the 1950s). Studying the *kula* therefore, where males compete for valuables through skills associated with oral traditions, in isolation from the exchange activities of women gave an incomplete and misleading impression of the balance of social and economic power within the matrilineal Trobriand society. Weiner concludes (1976: 220):

"By continually emphasizing the primacy of exchange as social rather than economic, anthropologists have tended to ignore exchange as part of a power system. We must push exchange beyond the level of our view of the social world and seek to understand exchange as the means, however limited, of gaining power over people and control over resources in the widest sense."

There is another issue with the historical primacy of economic anthropology in the work of Polanyi and Finley and the Substantivist school as applied to the LBA Ancient Near East and the Aegean. Basing their model on observations made of small-scale, horticultural, pre-literate societies in a small archipelago seems to be pushing analogy too far when attempting to understand the motivations of exchange in urban, literate societies engaged in long-distance interactions in the second millennium BC in the Old World. Braudel more eloquently critiques Polanyi's approach as follows (1982: 225):

"... it is rather like drawing on Lévi-Strauss's explanation of kinship ties to elucidate the rules governing marriage in Victorian England."

In addition, in a more recent anthropological study, Thomas (1991: 3-4) summarises arguments drawn from later work in the Pacific that, while not denying that exchange practices are culturally specific, analysis must take account of

"... the full range of transaction forms, instead of only those which accord with Maussian stereotypes of the gift economy."

As Whitley (2002: 220) summarises, Thomas makes the case that

"... commodities and gift exchange, sentimental and market value co-exist in both 'primitive' and modern economies."

Thomas also makes a very valid point that nearly all the societies which anthropologists made into case studies for exchange theory were, or still are, colonized (1991: Acknowledgment). The fact that the societies being recorded were not pristine, and had already had considerable contact with colonialists, is something else that should have been central to the analysis. Given the unequal nature of the relationship between the colonisers and their subjects, Thomas believes that this would have had a significant influence on exchange practices. This issue is not further explored here, but is covered at length in Gosden and Knowles (2001).

Notwithstanding these developments in anthropology, as Monroe (2000: 8) points out, many dictionary and encyclopaedia entries, particularly relating to Ugarit, still present models of state-controlled long-distance trade and deny the existence of private entrepreneurs, Heltzer's 1999 chapter in the *Handbook of Ugaritic Studies* being a recent example of this phenomenon.

Regional Studies of Trade

Theoretical studies on the trade systems in which the LBA cities of the northern Levantine littoral participated are few. What is beyond doubt is that, after Ugarit passed under Hittite control, especially after the peace treaty between Egypt and Hatti was signed in approximately 1258 BC, it enjoyed a period of unprecedented prosperity as the main port of trade between the Egyptian and the Hittite Empires. Contact between Ugarit and what later became the Phoenician cities of Byblos, Beirut, Sidon and Tyre is also attested from texts, with contacts further south to cities such as Akko, Ashdod and Ashkelon far rarer (Singer, 1999: 668). Singer also cites textual evidence in which the King of Carchemish restricts the activities of the Ugaritic fleet with respect to the Syro-Palestinian coast no further south than Sidon.

However, a truly regional unit of analysis has not yet been applied to the archaeological record of the northern Levantine coast. This thesis sets out to tackle this task for the two

selected classes of material evidence, as well as placing the northern Levant in its regional context by presenting comparative contemporaneous data from the southern Levant and Cyprus.

Modified World-Systems Perspectives

The work of Andrew and Susan Sherratt (e.g. Sherratt and Sherratt, 1991; A. Sherratt, 1993) since the early 1990s has made an important contribution to the theoretical debate on ancient Mediterranean trade. Andrew Sherratt's modified world-systems perspective (A. Sherratt, 1993) has sought to analyse the evolution of trade both across broad geographic units of observation (Europe and the Near East) and considerable time depth (the Neolithic to the Iron Age). His more recent work has expanded this even further to analyse evolution of networks of contact within the Afro-Eurasian system (A. Sherratt, 2003).

The world-systems perspective as originally conceived by Immanuel Wallerstein (1974) is part of the Structuralist approach for analysing long-term change (Dark, 1998: 20). It has been particularly influential upon archaeologists and the concept of core (or centre) and periphery has been an important paradigm within archaeological theory since the late 1970s (e.g. Champion, 1989; Rowlands et al., 1987). Originally focused on understanding the rise of capitalist world domination, and the growth of inequality, Wallerstein considered larger units of observation than previous historians, sociologists and anthropologists (who had analysed units such as tribes and nation states).

Wallerstein's ideas have not been universally accepted within archaeology for a number of reasons.

1. His belief in only one mode of production, the capitalist mode, has been perceived as a problem for conceptualising ancient economies.

2. His definition of world-system is very restrictive and confined to "exchanges of bulk food products for manufactured goods between politically separate entities" (A. Sherratt, 1993: 4).

3. The concept does not cover non-food raw materials, such as metals, or prestige products (carrying with them symbolic and social significance).

The wholesale adoption of Wallerstein's original model into archaeological theory therefore has been problematic. Frank, another scholar of international relations, has argued that world-systems analysis can be applied to at least, the last 5000 years (Frank, 1993; Frank and Gills, 1993). He argues that a single system obtained throughout this period and that economic cycles effected changes in world politics, but Wallerstein himself does not concur with this position (Dark, 1998: 21).

Critics of Wallerstein's conception have included Renfrew, whose work with John Cherry (Renfrew and Cherry, 1986) on peer-polity interaction in the early Aegean takes a more egalitarian line about the interaction of different polities and their influence on each other. In later work Renfrew has expressed the view that relationships between neighbouring areas can be explained without the need to invoke the concepts of inequality and relative underdevelopment that drive relations within the core/periphery paradigm (Renfrew 1993). According to Champion (1989: 1-18), Renfrew has also branded the concept of centre and periphery as an example of diffusionism in a new guise, with its emphasis on exogenous change, with which Champion takes issue.

Like Renfrew's peer-polity model, centre and periphery moves the debate away from neo-evolutionary theories of social development (which have looked at the growth of single polities and looked within them for the causes of change). Unlike peer-polity interaction, however, centre and periphery provides a framework for analysing how relationships between polities at different levels of economic, political and technological development produces change in those polities.

Many archaeologists unfortunately continue to equate world-systems approaches with Wallerstein's original 1974 conception grounded on capitalist empires and the commercialisation of commodities from their colonies. In fact, theorists in this field have moved on, producing many refinements relevant to analysing ancient world-systems. Andrew Sherratt (1993) identified that *adaptation* rather than *adoption* would be necessary if world-systems thinking were to be useful in archaeology and this is what has taken place from the late 1970s onwards.

Chase-Dunn and Hall (1991: 7) have expanded Wallerstein's original notion of core/periphery relations to include issues relevant to the ancient, pre-capitalist world. They make a distinction between core/periphery differentiation (between societies of

different levels of complexity interacting with each other within the same world-system) and core/periphery hierarchy (where societies dominate others ideologically and economically within a world-system). They also recognise that not all ancient world-systems have cores that have exploitative relations with their peripheries (Chase-Dunn and Hall, 1991: 18-19).

Indeed prior to this, Kohl (1987: 20-21) had remarked that in the Ancient Near East:

"... peripheries situated between cores were far from helpless in dictating the terms of exchange."

This is something that surely applied to Ugarit, located on such an important interface between the Hittite and Egyptian cores, especially as it seemed to have a reasonable degree of autonomy from its overlords to conduct business in the manner it chose. Few Hittite texts concern themselves with trade and one is left with the impression that, as long as the tribute and goods kept flowing, Hattusa and Carchemish were happy to let the merchants and administration of Ugarit conduct business on their behalf.

Since the late 1970s, world-systems perspectives have appeared in the archaeological literature of the Near East (e.g. Rowlands et al., 1987), Europe and particularly that of the New World (e.g. Peregrine and Feinman, 1996). Peregrine (1996: 1) summarises the difference between a world-systems perspective and world-systems theory, or analysis:

"The world-system perspective... allows one to perceive the world as a set of autonomous political units linked into a larger functioning unit through economic interdependence. World-Systems theory defines the nature of the economic interdependence."

This is an important distinction, as the application of world-systems perspectives in archaeology results in the removal of much of the analytical methodology conceived by Wallerstein which according to Stein (1999: 16), involves

"... core dominance, core control over an asymmetric exchange systems, and the causal primacy of long-distance interaction in structuring the political economy of the periphery."

A world-systems perspective can, therefore, be useful when analysing the ancient Eastern Mediterranean. The spatial focus of such an approach has the potential to examine the geographical relationships between cores and peripheries, facilitating the analysis of access to resources, and transportation thereof between the periphery and the

core. It also assists archaeologists to identify spatial patterns in material culture and to tie these back to social, economic and political factors (Peregrine, 1996: 2). Furthermore, it is a perspective that allows for multiple levels of analysis (inter-state down to inter-family group) and also provides the framework for evolution and change within systems. This ability to look at ancient economies not as unitary systems but as a combination of modes of accumulation practiced by different groups within societies (Monroe, 2000: 20) is particularly relevant during periods of change, such as the one under consideration here, where there may be changes in the relative importance of different forms of exchange.

It is probably fair to say that much of the discussion of world-systems theory in the archaeology of the Ancient Near East has focused on earlier periods than the one under consideration in this thesis in which dominance of one area over another is much harder to justify. An example of this would be Stein's recent book (1999). There is little doubt, however, that different parts of the Levantine coast were in an asymmetrical position either with respect to Egypt or Hatti at the close of the LBA. The degree of this asymmetry may have varied, and Ugarit's relationship with its Hittite overlords may have been less unequal in the late 13th century BC than that of the southern Levant and their Egyptian masters, but the LBA Levant is surely a suitable candidate for examination using a world-systems perspective.

Christopher Chase-Dunn and Thomas Hall (1997) have developed a framework for characterising world-systems that I consider to be particularly relevant to the study of the Eastern Mediterranean world-system at the end of the LBA. They highlight the danger of applying core/periphery methodologies to ancient world-systems in too simplistic a way as they consider that most, if not all, ancient world systems were multi-centric (Chase-Dunn and Hall, 1997: 19). This would apply particularly to the Levant in the LBA, where the peripheries of, and interstices between, the Egyptian and Hittite Empires contained significant actors in the regional economic picture, principal among them the kingdom of Ugarit.

Their approach defines "mode of accumulation" as "the deep structural logic of production, distribution, exchange and accumulation" (Chase-Dunn and Hall, 1997: 29). This provides a more complete picture of the lifecycle of artefacts found in the

archaeological record that relate to long-distance trade (when compared with the older mode of production concepts espoused by Marx and others).

Chase-Dunn and Hall characterise three main types of accumulation: kin-based (typical of small scale societies), tributary (using organised coercion to mobilise labour) (1997: 41) and capitalist (in which price setting markets mediate transactions between individuals (*ibid.*: 43)). They classify the ANE world-system as having been multi-centric, with a predominantly (but not exclusively) tributary mode of accumulation. They reason that more than one mode can operate within a particular world-system and go on to describe merchant capitalism in terms that have strong resonance with not only the Iron Age city states of Phoenicia (Chase-Dunn and Hall, 1997: 91) but also, in my view, with Ugarit at the end of the LBA. Like Iron Age Phoenicia, LBA Ugarit was located in the perfect strategic location to mediate trade between the core empires of the LBA (Egypt and Hatti) and the peripheral areas that supplied strategic raw materials, the most striking example of which is tin.

This scarce metal, critical for bronze manufacture, was one of Ugarit's key trading commodities. As is discussed at greater length later in this chapter, tin is believed to have arrived at LBA Ugarit from sources in central Asia (Uzbekistan and/or Tajikistan – where it was mined seasonally by pastoral nomads – Weisgerber and Cierny, 1999; Cierny et al. 2001) via the Euphrates Valley across the shortest distance to the coast from Emar to Ugarit (see Map 2). The textual evidence bears witness to the activities of individual entrepreneurs (e.g. Monroe, 2000: 178-241), and there is a strong suggestion that the palace extracted the majority of its wealth through taxation (produce and labour), rather than direct investment in long-distance trading ventures (Foster, 1987).

Applications in the Levant

So far, only limited use has been made of concepts such as core/periphery and world-systems perspectives when analysing trade in the LBA Levant. Liverani's 1987 article, promisingly entitled *"The collapse of the Near Eastern World System at the end of the Bronze Age: the case of Syria"*, is a rare example. As already mentioned, this concludes that the kingdom of Ugarit was on the point of internal collapse before it was destroyed. However, it neither fully addresses the situation in greater Syria, nor Syria's role within the wider LBA Eastern Mediterranean world-system. Higginbotham (2000) has used

this framework to explore the material culture of Ramesside Palestine in terms of élite emulation, rather than a substantial Egyptian presence.

As already mentioned, perhaps what has been missing in this field of enquiry with respect to the Eastern Mediterranean generally, and the northern Levantine coast specifically, is the linkage between large-scale theoretical constructs of trade interrelationships and the detailed archaeological evidence. In the absence of such synthesis, it is relatively easy for one-site archaeological excavators to shoot-down the propositions of the grand theorists on points of material culture detail.

Liverani's 1995 paper entitled *"La Fin d'Ougarit: Quand? Pourquoi? Comment?"* is asking the right questions in its title with the precision of a forensic scientist. However neither he nor the other contributions in the same section of Yon et al., (1995) covering the destruction of Ugarit attempt to synthesise systematically the archaeological evidence from Ugarit with that from the texts. Nor is there an attempt to synthesise archaeological evidence from Ugarit with that from the rest of Syria.

Equally, while conference proceedings and *Festschriften* abound on the subject of the "*Catastrophe*" in the Eastern Mediterranean c. 1200 BC (e.g. Ward and Joukowski, 1992 and Oren, 2000) these comprise site-specific or sub-regional discussions that make few rigorous comparisons with neighbouring areas. This is why this thesis compares the situation in the northern Levant with neighbouring areas in order to assess how the dynamics of the regional economy changed over this critical period within its Eastern Mediterranean context.

Domination and Resistance and Concepts of Value

Urban and Schortman (1999) have critiqued the incorporation of world-systems perspectives into archaeology as concentrating too much on the narrow field of raw materials, finished goods, and production and transportation technologies when examining inter-societal or core-periphery relationships. These authors believe that it is important to explore the influences of foreign ideologies and how these were used to negotiate intra- and inter-societal relations. Drawing on the contribution of Helms (1988), as already mentioned scholars such as Broodbank (1993) and Knapp (1998) have considered the conception of distance, knowledge and power with respect to trade-

based interaction. This is probably the main contribution of post-processualist thought to the study of trade.

The body of literature that relates these concepts and period to the sites being examined in this study is slight, however, especially in contrast with what has been achieved in, for example, Mesoamerica. With regard to the southern Levant, Bunimovitz and Faust (2001) examine the social meaning of Philistine Monochrome pottery within the context of the high competition with, and the need to negotiate a separate identity from, surrounding Egypto-Canaan. Bevan (2001) has examined Eastern Mediterranean value regimes through stone vessels, and considered the role of Egyptian culture therein (2003).

Van Wijngaarden (1999) published an archaeological approach to how Mycenaean ceramics were valued at Ugarit. This class of objects has the virtue of having been accessible to people from all social groups at Ugarit, not just the élite (based on the contexts of discovery), and is ubiquitous enough to produce statistically meaningful results. Responses to this paper from other scholars (De Mita, Voutsaki and Whitelaw – which are published with it) make constructive suggestions for enhancing this important first step in understanding the relationship between the roles the imported pottery played in their cultural context at Ugarit.

Methodological aspects related to the quantitative analysis underlying Van Wijngaarden's paper, including some of the suggestions made by the respondents to his work, were discussed and applied in my MA dissertation (Bell, 2001) and are briefly reviewed in Chapter 3. Specifically, by comparing quantities not only Mycenaean wares but also the other major class imports, Cypriot wares (as suggested by Whitelaw, 1999) (and considering diachronic changes in the proportions of these wares at four northern Levantine coastal sites) significant differences in their imported ceramic repertoire began to emerge (Bell, 2001; Bell, forthcoming). The northern Levantine sites analysed were Ugarit, Ras Ibn Hani, Tell Sukas and Sarepta. The ability of this methodology to reveal quantitative variation in ceramic imports opened up the possibly of gaining better precision on the nature of long-distance trading relationships by dividing the Levant into smaller zones of interaction (as described in Chapter 1). This thesis, therefore, analyses the imported ceramic data from representative coastal sites from each zone that were engaged in maritime trade.

That Ugarit has produced by far the largest quantity of Mycenaean pottery of any site in the Levant needs to be calibrated by context (as Van Wijngaarden, 1999 pointed out). These data also need to take account of the extent of excavations, given that the scale of excavation at Ugarit is orders of magnitude different from many other sites in terms of area.

Van Wijngaarden published a more wide-ranging study of how Mycenaean wares were used and appreciated across the Eastern and Central Mediterranean in 2002. Ugarit is among the sites this book examined in detail, but the Mycenaean ceramic imports are considered in isolation from other ceramic imports and, indeed, other imported items that may have been part of the same value system, such as stone vessels.

Recent Developments in the Levant

The work of Braudel (particularly Braudel, 1982) is, in many ways a precursor to the world-systems perspective that has been applied to pre-modern societies. A recent paper by Larry Stager (2001), the excavator of Ashkelon (one of the pre-eminent Bronze and Iron Age ports in the southern Levant) takes a Braudelian, if not an overtly world-systems, approach to explore the power of ports in the southern Levant in the EBA and MBA. Importantly, he integrates both archaeological and textual evidence into his argument and characterises the key to the wealth generation potential of the ports as their ability to integrate the arteries that connected the hinterland which produced raw materials and manufactured goods with the heart (the sea port) that pumped out these goods to the overseas markets of the Eastern Mediterranean.

He defines the enduring sources of power in Levantine coastal societies as being those of (Stager, 2001: 629)

"... import-export merchants, usually an oligarchy, who exercised indirect economic power through the integrated and hierarchical system of market exchange"

He deals with, and despatches, Polanyi's market-less trade concept in a sentence (Stager, 2001: 634)

" These merchants were operating in a competitive, entrepreneurial environment, not in the Polanyianna world of "marketless trade". "

Stager, therefore, sees the roots of Levantine mercantile capitalism stretching back, not to Iron Age Phoenicia, but to the early third millennium BC. Only the geographical

scope of trade links, and the quantities of goods being trans-shipped, were more limited than those seen later in the LBA expansion and the explosive move into the Western Mediterranean during Phoenician times. Moreover, he believes that EBA and MBA merchants wielded more economic power than the ruling princes of the harbour towns or the inland rulers of fragmented polities.

With regard to the overall questions being researched in this thesis, I have not identified any studies that use a world-systems framework to rationalise the intra-regional shifts in mercantile activity, or the differential rates of destruction and recovery of previously important economic centres after the collapse of the Hittite Empire and the onset of decline of Egyptian influence.

Lessons from the Aegean

Scholars studying Mycenaean trade, having endured a famine of new Linear B finds, have evolved useful approaches that are absent in Levantine scholarship. Paul Halstead (1992, 2001), by integrating archaeological evidence with analogical evidence from the present-day rural economy, has been able to fill in some gaps in the Linear B palace records such that a fuller, and more complex, picture of the palace economy has begun to emerge. Another strength of his approach has been not only to consider the flow of goods and services from the perspective of the élite, but also to assess the situation from the point of view of the subject populations residing in the hinterland of the palaces. He has also examined the co-existence of a wealth economy alongside the production of staples. Todd Whitelaw (2001) has applied a similar perspective to explaining the production and consumption of pottery in the region of the Pylos palace immediately prior to its destruction, on which the texts are mute. Similarly holistic approaches have not been applied to the economies of the city-states of the northern Levant so far, possibly due to the super-abundance of textual material.

Influence of the *Sea Peoples* on the Regional Economy

The arrival of the *Sea Peoples*, some of whom may have arrived by land, is often equated with the destructive events that happened around 1200 BC. The impact of movements of these diverse population groups and, indeed, what caused them to leave their homelands are subjects of continuing debate. Beyond doubt is the settlement of one such group from an Aegean cultural background, the Philistines, in the southern

Levant, bringing with them a distinctive material culture that endures and evolves over the centuries that followed. The effect any such groups had on the northern Levantine coast is far less clear-cut.

Two suggested interpretations of the nature of the *Sea Peoples*-Canaanite interaction that relate to the economic structure of the northern Levant have been identified.

The first interpretation is that of Jonathan Tubb (personal communication, May 2001). After the initial arrival of invaders/dislocated peoples of an Aegean cultural background on the Levantine coast, did these *Sea Peoples* reach a mutually advantageous working relationship with some Canaanite coastal trading cities, which continued to flourish into the Iron Age (as Phoenician cities), at the expense of others? For example, at Sarepta there is continuity of sequence from the 14th century BC to the 10th century BC whereas Ugarit, the pre-eminent Levantine port, never recovers. In a similar vein, Bikai (1992) has also suggested that Phoenicians were allies of the *Sea Peoples*, rather than their victims.

Susan Sherratt (1998) suggested an alternative interpretation of the possible influence of *Sea Peoples* on the regional economy. Could the change in material culture in the sites of the northern Levantine littoral be consistent with the replacement of formerly imported Cypriot wares (including derivative Mycenaean wares) with locally produced wares under a free-market system? Does this changing material culture say more about evolving economic systems (such as the reduction in influence of the highly centrally controlled economies of Hatti and Egypt) than an introduction of new ethnic peoples into positions of economic importance?

Detailed analysis of the archaeological evidence (including both imported ceramics and metal objects) will be used to investigate whether either of these two suggestions fit the data or whether another explanation can be put forward that better explains the intra-regional evolution of patterns of production, consumption and exchange and the evolution of these across the LBA/Iron Age transition.

The Problem of Tin

One of the most vexing questions with regard to the development of bronze metallurgy in the Levant generally, and understanding long-distance trade in the LBA specifically,

is the source of the tin – a relatively scarce raw material in the Near East and Anatolia. The occurrence of copper is far more widespread, and considerable strides have been made in provenancing sources of ancient copper using lead isotope analysis (e.g. Gale et al., 1985, Stos-Gale, 2000 for overview). In sharp contrast, the literature on ancient tin is peppered liberally with phrases like "the problem of tin" and "where is the tin?"

Given that tin is a significant component of the bronze alloys found in artefacts from the EBA onwards, it must have arrived at the foundries of the area under consideration in this thesis as a consequence of long-distance trade. With respect to the questions being examined here, it is possible that the evolution of tin trade routes and how these were "controlled" and which "markets" they served may be of considerable importance in explaining the contrasting fates of the LBA coastal cities of the northern Levant. However, this is not a question that has been specifically explored in the literature of ancient tin.

Characteristics and uses of tin

Tin was one of the first metals known to, and used by, man (USGS, 2003), having been deliberately added to copper to produce a hardened alloy (tin bronze) since the beginning of the third millennium BC. Old Babylonian textual sources and analysis of metal assemblages suggest that tin bronze becomes more abundant from 2500 BC onwards (Weisgerber and Cierny, 2002) and that during the third millennium BC, it was principally used for the manufacture of prestige items, rather than for utilitarian objects that utilised its mechanical properties. Archaeological evidence shows that by the end of the third millennium BC, the use of bronze (copper alloy initially containing 1-2% tin) has become widespread in the region, and the second millennium BC sees the arrival of bronzes with much higher proportions of tin, particularly in Anatolia and Mesopotamia (Pare, 2000: 8). By the end of the LBA, tin percentages as high as 10% were by no means uncommon (Pickles, 1988; Pickles and Peltenburg, 1998). The optimal percentage of tin for what might be termed weapons-grade bronze is in the region of 10%, a level that improves the hardness of the alloy without causing it to become brittle (Chanut, 2000: 244).

Tin is rare in nature compared with copper, being present in a concentration of only 2 parts per million (ppm) in the earth's crust, compared with 63 ppm for copper. Today, nearly every continent has a country that produces substantial quantities of tin.

However, in the LBA, only two mining areas in Central Asia have been found that might have supplied the Ancient Near East and the Eastern Mediterranean. The only ore of commercial importance today is its oxide cassiterite (SnO_2) and only small quantities of tin are produced from complex sulphides such as stannite (Cu_2SnFeS_4). Cassiterite is also likely to have been the principal, if not the only, ore smelted during the LBA.

Given the likelihood that tin came overland by donkey caravans from distant eastern sources to the Levant, it would be logical to do so in the form of ingots, rather than as ore, given the distances and quantities involved (Maddin, 2002).

Provenience of Ancient Tin Sources

Despite more than 50 years of research (e.g. Forbes, 1950), the identification of ancient tin sources and trade routes to the foundries and emporia of the Eastern Mediterranean remains uncertain and conflicting hypotheses arise from archaeological, geological and textual sources (Weeks, 1999). Furthermore, even though tin exists in nature in 10 stable isotopic forms, techniques for provenancing tin have not yet resulted in reliable linkages between ore bodies and objects, but some promising progress is being made (Clayton et al., in press).

Charles (1975) helpfully put forward a metallurgist's perspective on how archaeologists might look for ancient tin sources but, as Weeks (1999: 50-51) puts it, the crux of the 'tin problem' is that

"...the majority of regions of Western Asia have no geologically-verified tin deposits and those that are known show no archaeological evidence of Bronze Age exploitation and are located in areas where the local metallurgy does not incorporate the production of bronze alloys".

This statement pre-dates the publication of "*The Domestication of Metals*" by Aslihan Yener in 2000, which details the evidence for specialised tin mining at Kestel (from the Chalcolithic to Byzantine times) and tin smelting and metal artefact production at Göltepe in the Taurus mountains in Anatolia in the EBA. There has been a vigorous debate among scholars about the validity of Yener's claims (e.g. Hall and Steadman, 1991 and Pernicka et al., 1992), but Yener's 2000 publication presents archaeological material discovered at Göltepe in well-defined EBA contexts that can be used to piece together the production process (from slags, metals, vitrified products and residues). Winding the clock forward to c. 1900 BC, Yener believes that the influx of "cheap" tin

from abroad (attested from the texts found in the Old Assyrian trading colony at Kültepe) may have contributed to the end of the tin industry at Göltepe. Although this work has proven that tin production did take place in the Taurus Mountains in the EBA, it was probably not the only source of tin and the scale of operations may have only been able to supply local needs. There is no evidence that they were in operation during the LBA, but absence of evidence may be due to other factors such as subsequent mining activities (as is the case of the copper mines of LBA Cyprus, for example).

Weeks (1999) cites Muhly's view that the Aegean and Anatolia might have looked to tin sources in Sardinia and Iberia, or even the Erzgebirge Mountains of Bohemia, and Brittany, but there is no archaeological evidence supporting such possibilities at present for the LBA. Crawford (1974) suggested that tin used in the metal industries of Iran and Mesopotamia came from Uzbekistan while others have suggested India or even Malaysia. Weeks' own recent work infers that Afghanistan may have been the principal source of tin during the Bronze Age in Western Asia. However, the lack of identified mine workings dating to the right period means that such hypotheses cannot be corroborated at present.

Since 1992, work carried out by researchers from the Deutsche Bergbau-Museum at Bochum (Cierny et al., 2001; Weisgerber and Cierny, 1999) suggests that Karnab in Uzbekistan and Muschiston in Tajikistan were examples of Bronze Age tin mines. Cierny et al. (2001) posit that nomadic herders in the desert-steppes of Central Asia mined tin on a part-time basis on behalf of the "Hochkulturen" to the south from the first half of the second millennium BC onwards. They raise the possibility of "Metallstrassen" (fore-runners of the later Silk Road) running between Central Asia and the Ancient Near East. Unlike Kestel, the scale of operations at these mines during the Bronze Age suggests that they could have supplied a considerable amount of tin to the Ancient Near East, but again such conclusions must be treated with caution in the absence of other evidence.

Textual Sources on Ancient Tin Supply Routes and Prices

Textual sources on the tin trade come from both Mari on the Euphrates in Syria (dating to c. 1800-1700 BC) and Kültepe in central Anatolia (c. 1835-1745 BC) (Weisgerber and Cierny, 2002). Both of these archives indicate that tin was moving from east to west, along the Euphrates to Mari, or overland to Assur. Tin from Assur was shipped by

donkey caravan to Kültepe (and presumably other as yet undiscovered Assyrian trading colonies) while that from Mari went to Syria and Palestine (Malamat, 1993). Although many of the 6000 or so Mari tablets relate careful accounts of tin shipments that verge on treating it as a precious metal (Weisgerber and Cierny, 2002), the texts reveal nothing of the source of the tin, merely way-stations on its trade routes (Weeks, 1999). Weeks cites gift exchange with Susa as being the likely mechanism for its arrival at Mari.

The Euphrates/Mari route seems likely to have fed Ugarit and other kingdoms towards the Mediterranean coast. Tablet A. 1270 found in room 108 of the palace of Zimri-Lim at Mari (Dossin, 1970), lists Ugarit twice among the list of towns receiving tin from Mari (which also includes Aleppo and Qatna in Syria and Hazor in northern Israel). This list also includes a delivery to a Capthorian (Cretan) and possibly a Carian from southern Anatolia. This tablet confirms that Mari was an extremely important and active tin trading/trans-shipment centre during the Middle Bronze Age.

Tin, likewise, was a main commodity of trade between Assur and Kültepe and, as was the case with Mari, Susa also seems to have been its supplier (Weisgerber and Cierny, 2002). Assur's pivotal role in the east-west transit of tin is also corroborated by documents detailing tin loans (Monroe, 2000: 171). The Old Assyrian texts also give information about the use of transport animals, including having different words for donkeys that carried different types of load. Donkeys that carried textiles were termed *kib/pšum* while *upqum* were donkeys that carried heavy loads or metals (Monroe, 2000: 78). Although they are rarely mentioned in LBA texts, donkeys must have been vital and, unlike ships, would have been available in *"unlimited quantities"* (Veenhof, 1972: 2) at commercial centres such as Ugarit, where documentation on donkey caravans is lacking (Monroe, 2000: 78).

Heltzer (1978) has analysed textual evidence from Ugarit with regard to the price of tin and compared this with the other textual sources on its price elsewhere in the ancient Near East. He concludes (Heltzer, 1978: 102) that the price of tin was slightly higher at Ugarit at the end of the LBA (3 minas of tin = 1 shekel of silver approximately) compared with 3.66-8.66 minas of tin to 1 shekel of silver in roughly contemporaneous Nuzi (located just west of the Zagros Mountains, closer to any eastern source of tin).

Heltzer, in the same publication, also looked at the relative price of tin documented through time; calculations on his data suggest that the price of tin in MBA Kültepe was over 30 times higher (relative to silver) than in LBA Nuzi. He attributes this discrepancy to more than distance from any eastern source – possibly the availability of greater supply in the LBA (from more mines or better technology in extraction). He makes the implicit assumption that there had not been a bout of deflation between the two periods, which is probably not unreasonable.

Heltzer's suggestion about greater supply/availability of tin in the LBA is borne out by the archaeological evidence. Far from being in short supply, a suggestion put forward by Waldbaum (1978) to explain the motivation for the adoption of iron technology at the end of the LBA, work by Pickles (1988) analysing a number of well-dated bronze objects finds no evidence for a fall-off in the tin content of bronze as 1200 BC was approached. Indeed Pickles found that tin percentages in the alloy were still rising as it was continuing to replace arsenic within the alloying process.

Power Structures and the Tin Trade

The literature does discuss the control of tin routes as the motivation behind the territorial expansion undertaken by the Hittite kings in their military campaigns from 1550 BC onwards (Anon: 2002: 310). Macqueen (1996: 41) postulates that trade was the prime motivation for Hittite expansion in Wilusa (which lay in NW Anatolia and en-route to Europe with respect to the Hittite heartland in central Anatolia) during Hattusili I's reign (1565-1540 BC (Anon, 2002: 310)). Specifically, Macqueen mentions Mellaart's suggestion in the late 1960s that the Hittites might have obtained tin supplies from Bohemia via this route. As already mentioned, there is no evidence for Bohemian sources supplying this region during the LBA. At the diametrically opposite end of Hittite territory, the conquest of Syria was completed by Hattusili I's successor, Mursili I (1540-1530 BC (*ibid.*)). The importance of North Syria in Mesopotamian and Anatolian trade networks is demonstrable from the MBA onwards, with Ugarit being the principal Mediterranean port for the Syro-Mesopotamian hinterland (Fletcher, 2004).

One of the characteristics of the Hittite Empire is its territorial instability and this first territorial expansion into Syria probably only lasted about 20 years. Another foray into Syria under Tudhalija I resulted in Syria being under Hittite influence between about

1415-1370 BC, but it was only under Suppiluliuma I (c. 1340 BC, as already mentioned in the case of Ugarit – see Figure 1) that Syria was finally brought under Hittite control. These regular campaigns into Syria may well have been motivated by the desire to ensure, as far as possible, the safe transit of tin from Mesopotamia and Syria to the Hittite heartland (Bryce, 2002: 88). The Euphrates tin route came under Hittite control as far as the middle Euphrates (Macqueen, 1996: 44). The control of Emar, with its fort at Faq'ous seems to have played an important part in protecting this route (Margueron, 1982). Relative stability then reigned in Syria until the fall of Hattusa in c. 1190 BC.

Susan Sherratt (2000) has suggested, based on evidence from the Uluburun and Cape Gelidonya wrecks, that the amount of metal circulating around the Eastern Mediterranean by the end of the LBA might have been so large that its supply would have been impossible for palace hierarchies to control (in contrast to a perception of a high degree of control in the 14th century BC). Consequently, she suggests that metal would have been available to a far wider cross section of society by this stage. This is consistent with the availability of metal for weapons for dislocated groups no longer under the control of a Palace – a description that might well be applied to the *Sea Peoples* – whose military activities coincide with the end of the LBA way of life.

Conclusions

Liberation from Models

There is no reason to suppose that only one economic system can operate at a time within ancient societies and understanding the interplay between a central redistributive system and a market-driven private economy, and how this changes with time, is a valid objective for research. The somewhat sterile Substantivist/Formalist debate now seems to have reached compromise (Monroe, 2000: 8).

"Most scholars have realized that economies are too complex to be described by a single model of control or ownership and that trade has culture-specific rules falling outside formalistic models."

Large Units of Analysis Linked to Detailed Archaeological Data

In my opinion, the key issue in obtaining meaningful results from world-systems approaches is selecting units of analysis that are large enough while maintaining sufficient analytical resolution of the archaeological data such that intra-regional variations remain visible. Champion (1989: 18) has stated that widening the field of

enquiry should not take place at the expense of understanding sub-regional variation in the patterns of production and consumption, however

"Distribution maps will not reveal world systems unless it is possible to give a detailed account of how the material being mapped was produced and consumed throughout the entire system."

Inclusive Approaches

This project is based primarily on the archaeological record, with Chapter 3 concentrating on imported ceramics and Chapter 4 on copper, tin and the bronze trade. Wherever possible, relevant textual material is incorporated in the discussion along with extant scientific evidence; a world-systems perspective is then applied to the data in Chapters 3 and 4 to get better precision on the scope and scale of interactions that led to the delivery of traded goods to their place of deposition.

To deal with a period where texts are absent in the Levant, namely the early Iron Age, Chapter 5 attempts to learn from approaches LBA Aegean archaeologists, who have far fewer texts at their disposal than Near Eastern scholars, have used to analyse with the Mycenaean economy (such as Halstead, 1992; 2001 and Whitelaw, 2001). This involves using analogy and deductive logic when looking for, and analysing, evidence for continued long-distance trade between the northern Levant and its partners in the earliest decades after the widespread destructions of Levantine sites. Having identified the possibility of more intense and direct trading relationships between the Aegean and the coast of modern Lebanon (Zone L2) during the LBA, the possible relationships are scrutinised in more detail by considering the following questions:

1. To what extent do the Linear B archives of the LBA Aegean palace centres support the contention that the Aegean had closer contact with Zone L2 than other parts of the Levant?

2. If such direct and intense trading relationships did exist between Zone L2 and the Aegean, what would this mean for the shipping routes through which this trade was achieved?

3. Would such a route still need to involve Cyprus and, if so, which part of the island would be likely to have been involved? What type of archaeological evidence in LBA Cyprus would be consistent with such a hypothesis?

4. Are there any areas of continuity of contact between the Levant and Cyprus between the end of the LBA and the Early Iron Age and what does this tell us about how trade patterns restructured after the widespread destruction of sites at the close of the LBA?

5. Finally, what role, if any, did intrusive population elements play in the different Levantine zones in the formative years of the Iron Age economy?

Overall, the durability of LBA trading relationships across the major disruptions that resulted in Ugarit's disappearance as a major port are investigated as well as which commercial ties endured and continued to prosper.

CHAPTER 3: THE IMPORTED CERAMIC EVIDENCE IN CONTEXT

As already discussed in Chapter 2, I believe that Chase-Dunn and Hall (1997) have developed a useful framework for characterising world-systems that is particularly relevant to the study of the Eastern Mediterranean at the end of the LBA. In this chapter, their analytical approach is applied to the imported ceramic data in the Levant and Cyprus. Such an approach addresses a number of problems in defining the spatial boundaries of the components parts of ancient systems of regional scale (Chase-Dunn and Hall, 1997: 17) by analysing and taking account of the following:

1. The frequency and intensity of interactions between component parts of the same system.

2. Whether any smaller systems are functioning within the larger ones.

3. Whether connections between counterparties to trade were direct or indirect (via intermediaries).

4. Whether control of trade networks was centralised or decentralised.

5. Whether centres in a multi-centric system interacted directly with each other or via shared peripheries.

Methodology

This chapter considers these questions only after assigning the imported ceramic finds to context types and quantifying them such that comparisons can be made between sites across the region. Imported ceramics are found in many context types in the Levant and, given that the archaeological contexts in which objects are found (domestic, funerary, palatial and ritual) are likely to reflect their function and significance in that society, my analytical approach requires that only like context types be compared at different sites. This quantitative study concentrates on domestic contexts, where ordinary people lived and carried out their daily business, which has the virtue of giving an insight into the *general* availability of imported ceramics that is less likely to be influenced by élite preferences or ritual or funerary practices. The sites mentioned in this chapter, along with the zones in which they lie, are shown on Map 2.

Excavated domestic contexts are available on all the sites under consideration, and my study primarily concentrates on this context category. Not all the sites have buildings with ritual functions or élite residences, but evidence from these other contexts is discussed where appropriate, as well as that from tombs.

Absolute numbers of ceramic finds at individual sites reveal next to nothing about the access of inhabitants of these LBA polities to imported wares, as these numbers are strongly influenced by the size of the excavated contexts. To deal with this issue, the area of each context has been estimated (in square metres), and the number of imported ceramic finds per 100 square metres (sq m) of comparable context calculated. This is, obviously, not a *true* measure of density, as the volume of fill removed per locus would be a better basis for this. However, published data do not allow such a detailed exercise, and the term 'concentration' will be used to describe the measure of ceramic finds per 100 sq m of horizontal exposure. As the assemblages discussed in this chapter mainly came from house floors, calculating a find concentration based on area is likely to prove a representative guide to the relative amounts at different sites.

Van Wijngaarden's (1999, 2002) contextual approach to the Mycenaean ceramic evidence from the Levant and Cyprus seeks to gain an understanding of how this particular class of imported pottery was valued within different contexts in the regions in question and is a valuable addition to previous cataloguing exercises. Although these provided useful compilations of the data, in practice the level of analysis published with them yielded little more than distribution maps, with no thought given to how some Levantine cities may have valued some shapes or functional classes over others. Van Wijngaarden, however, stops short of using the data to try to measure the relative abundance of this artefact class in the same context type at different sites (which, in my view, is a valid indicator of consumption levels). He also does not consider the relative frequency of Mycenaean wares in the context of the totality of the imported ceramic assemblage, which has the potential both to shed light on the social significance of Mycenaean wares and to assist in building a broader picture of the trade networks through which the wares found their way to a 'foreign' depositional context.

Site Formation Issues

The domestic contexts in the different sites covered in this study undergo cycles of rebuilding during the LBA. As a working hypothesis, therefore, the conditions under which imported ceramics came to enter the archaeological record within these houses are assumed to be broadly similar until the very last phase of the LBA (where some sites were destroyed and abandoned, others destroyed and rebuilt and Sarepta neither destroyed nor abandoned).

As pointed out by Steel (2002: 28), assuming that an object's depositional context is the same as the one in which it was used is problematic. With regard to domestic contexts, LaMotta and Schiffer (1999) point out that house floor assemblages are subject not only to accretion processes (in which they are deposited) but also depletion processes, such as the removal of valuable, or useful, items upon site abandonment. In the case of ceramics, which are in general both fragile and difficult to transport, perhaps there is a better chance that the surviving assemblage is broadly representative of what existed during habitation than other, more transportable and higher value/weight items such as those made of metal in a situation when evacuation or flight becomes necessary – as was the case at Ugarit, Enkomi, Tell Abu Hawam and Ashdod at the end of the LBA.

Taphonomic processes also play their part: out of 38 tombs excavated at Ugarit (Ras Shamra and Minet el-Beida), only two had not been disturbed and this is an issue that blights the analysis of tomb assemblages in this region. The widespread looting of tombs at Ugarit often makes it difficult to tell whether Mycenaean materials belonged to the intramural tombs, or to houses (Yon et al., 2000: 5).

Data Quality Issues

Mycenaean and Cypriot pottery are suitable for a regional-scale study such as this as examples are present in meaningful quantities along the length of the Syro-Palestinian coast, from Ras el Bassit in the north to Gaza in the south. Both have also been the subject of substantial typological study (for example Leonard's seminal 1994 catalogue *An Index to the Late Bronze Age Aegean Pottery of Syria-Palestine* and Bergoffen's (1990) study on the comparative distribution of Cypriot pottery in Canaan and Egypt in the Late Bronze Age).

While studies of the distribution of Mycenaean wares, most recently exemplified by Van Wijngaarden, 2002, exist on a regional scale and examine the contexts of deposition, such large scale analyses of Cypriot wares are, unfortunately, absent even though sub-regional studies exist (e.g. Gittlen, 1977). More recent focus has been given to the chronologies of these wares (e.g. Karageorghis (Ed.), 2001 and Åström (Ed.), 2001) than regional scale studies on the trading circuits through which they reached their point of deposition.

On a more fundamental level, the four Zones into which I have divided the Levant have experienced uneven attention from archaeologists, who necessarily operate within the jurisdiction of modern host governments and their priorities. Archaeological excavations are also curtailed periodically by geo-political instability and war, which unfortunately affect this region more than most.

The comprehensive review of Mediterranean sites that have produced at least one Mycenaean sherd by Van Wijngaarden (2002: Catalogue I, 323-329) highlights the large number of sites in modern Israel that have produced Mycenaean wares. Driven by a Biblical bias, and archaeological interest in the emergence of Israel as a nation, a high priority has been given to excavation of the LBA/Iron Age transition there that is well beyond that given in Lebanon and Syria. The Lebanese war brought research to a halt there between 1981 and the mid-1990s after which the initial priority became rescue excavations in modern Beirut ahead of its reconstruction (e.g. Badre, 1998). There is also a yawning gap in the archaeological record of some very important trading cities, including both Tyre and Sidon, due to continuity of settlement to the present. At Tyre, only one 150 sq m trench (Bikai, 1978) has penetrated this key juncture but there are excavations now underway again at Sidon under Claude Doumet-Serhal that have the potential to shed light on this critical period over the medium term.

We do not, therefore, have an equal sample from each Zone in the Levant. Nor do we have excavations of equal quality, either in their execution or their publication. The challenges of using data from sites that have an early excavation history are illustrated by the case of Ugarit (discovered in 1928 and continuously excavated between 1929 and the present). There are clearly many issues with the recording of contexts and find spots during the first 40 years of excavation at this site (i.e. up to 1970) as Schaeffer's recording methods generally ignored domestically produced pottery and only partially

recorded the imported wares. There are issues not only of stratigraphy, but also to assigning finds to specific topographical points, and, consequently, context types. A consistent horizontal grid was only established when Marguerite Yon assumed the directorship in the late 1970s.

Statistical methods based on vertical stratigraphy, such as that developed by Harris (Harris, 1989) cannot be applied to the available excavation records and, therefore, my work necessarily concentrates on the 'horizontal' distribution of artefacts at the sites within different context types, comparing finds from buildings of similar function at the different sites.

Notwithstanding all this, enough data exist to be able to select contexts for detailed comparative work and my long-term hope is that studies such as this one influence how excavators think about recording their ceramic assemblages such that these data can be more easily integrated into regional syntheses.

Mycenaean Wares

Leonard (1994) catalogued more than 2300 Mycenaean finds from the Levant published up to 1990 and classified them according to Furumark's typological classification (Furumark, 1941) into Furumark Shapes (FS) and Furumark Motives (FM). The range of different types of Mycenaean pottery forms found in the Eastern Mediterranean generally, and the Levant specifically, is large. The methodology set out in this section contextualises the suitable sub-sets of data from excavation publications with the aim of facilitating valid quantitative comparisons between similar contexts in different sites.

Plate 1 shows three classes of vessels used by Van Wijngaarden (2002) determined by how these vessels were used, namely storage, dinner and ritual. My study will use the term transport/storage, rather than storage, as transporting liquids was the function of these vessels in the first instance, before they became storage containers or participants within funerary rites. I will also consider figurines as a category.

Mycenaean pottery is the term given to wares that originate stylistically (if not always actually) from Greece during the LBA. Typological and stylistic studies by Furumark (1941) and others have given rise to a detailed seriation of these wares and this forms the cornerstone of the relative chronology of the Aegean LBA. There is considerable and heated debate over the absolute chronology of the three main phases (LH I-III) and,

indeed of the sub-phases within them. Many commentators (e.g. Van Wijngaarden, 2002) still adhere to the chronology articulated by Warren and Hankey (1989). This work was groundbreaking for its time, but now requires updating as a result of excavations at Mycenae itself, among others. This is particularly the case with respect to the period of concern of this thesis. French (in press a) recounts that excavations at Mycenae and Tiryns have yielded stratified sequences covering the first half or two thirds of the 12th century BC. As she points out, none of this evidence has yet been published in more than outline, and I owe a large debt of gratitude to Dr French for ensuring that I was aware of this major development and its implications for the Levant.

Table 3: Chronology of Mycenaean Ceramics

Subdivision	Approximate Chronological Range (BC)
Late Helladic I (LH I)	1600 – 1500
Late Helladic II A (LH II A)	1500 – 1460
Late Helladic II B (LH IIB)	1460 – 1400
Late Helladic III A:1 (LH IIIA:1)	1400 – 1375
Late Helladic III A:2 (LH IIIA:2)	1375 – 1300
Late Helladic III B:1 (LH IIIB:1)	1300 – 1230*
Late Helladic III B:2 (LH IIIB:2)	1230 – 1210*
Late Helladic III B/C Transitional (LH IIIB/C Trans)	1210 – 1190*
Late Helladic III C Early (LH IIIC Early)	1190 – 1130
Late Helladic III C Middle (LH IIIC Middle)	1130 – 1070
Late Helladic III C Late (LH IIIC Late)	1070 – 1050/30
Sub Mycenaean	1050/30 – 1020/00

*Source: After Mountjoy: 2001, Table 1 and French: 2002; Table 1. * denotes French's resolution of LH IIIB and LH IIIB/IIIC Transitional (E. French and J. Phillips Personal Communication, 2004)*

French (*ibid.*) recounts that the earliest LH IIIC Early material at Mycenae lies on the floor of buildings that appear to have been destroyed by an earthquake. A short period following this is represented by the Tower phase at Mycenae, but these buildings were abandoned not long after this. Fortunately, as French points out, the sequence at Tiryns (excavated by Joseph Maran of Heidelberg) picks up the baton at this point and provides the stratigraphy for LH IIIC Middle in the home-base of this ware.

Absolute dates are few and far between for the period of transition from the LBA to the Iron Age. Manning et al. (2001) recently presented radiocarbon (^{14}C) data from different sites in Cyprus suggesting that the LC IIC period came to a close in 1200 BC +20/-10. The LH IIIC style arrived in Cyprus shortly before the end of LC IIC (see Chapter 5 under the discussion of Maa-*Palaeokastro*) and the chronology presented in Table 3 conforms to this date. Recent announcements by Wardle (2004) regarding the absolute dates obtained from charred wood samples from the excavations at Assiros

Toumba in Central Macedonia (conducted between 1975 and 1989 by the British School at Athens and the University of Birmingham) do not agree with Table 3, however. These dates, based on dendrochronology and ^{14}C wiggle match dating, are at least 50 years earlier than shown in Table 3, with the end of LH IIIC being before 1070 BC. More controversially, based on the information released so far, this work suggests that the end of LH IIIB occurs before 1270/50 BC, also at least 50 years earlier than the current consensus (Wardle et al. 2004). If these results stand, there are significant implications for the chronology of the Eastern Mediterranean.

LH IIIC makes its first appearance in the Levant in strata that immediately overlie the destruction layers marking the end of the LBA (or in levels that correspond to these at sites such as Sarepta, which were not destroyed). The earliest form of the ware found in the Levant appears not to have come from the Greek mainland, or the Aegean (in sharp contrast to the vast majority of LH IIIB) where, by this stage, the Mycenaean palaces had been destroyed. Cyprus is one candidate for its origin (LH IIIC certainly becomes the dominant ceramic form at Enkomi at this time – see Table 10 and Table 11). There are many issues surrounding the LH IIIC sequence and the development of the style in Cyprus and accepting identifications as made in older excavation reports can be problematic. As a consequence of their non-"Greek" origin, LH IIIC wares found at Levantine sites are not included in the discussion of Mycenaean wares in the analysis in this chapter, but are discussed further in Chapter 5 as we cross the LBA/Iron Age transition.

My starting point is similar to Van Wijngaarden's approach (1999, 2002). His 1999 article particularly (entitled "An Archaeological Approach to the Concept of Value: Mycenaean Pottery at Ugarit (Syria)") together with important comments published in responses from De Mita, Voutsaki and Whitelaw informed the first step in the analytical approach I adopted in my MA dissertation (Bell, 2001).

Van Wijngaarden (1999) divides archaeological contexts at Ugarit into four types (Domestic, Funerary, Religious and Unknown) and then analyses the vessel types found in the different contexts and seeks to draw inferences on how the inhabitants of Ugarit valued these wares. His work was based on a sample of 616 vessels from the tell of Ras Shamra and its harbour of Minet el-Beida (collectively known as Ugarit). This publication unfortunately predates the publication of *Ras Shamra-Ougarit XIII* (Yon et

al., 2000), which adds a further 433 unpublished Mycenaean vessels to the corpus, but Van Wijngaarden's 2002 publication still does not incorporate these data in detail.

As mentioned in Chapter 2, my methodology also integrates some of the comments made by the respondents to Van Wijngaarden's 1999 paper. These constructive criticisms are listed below and include the need to look at Cypriot wares and the domestic assemblage:

1. Some quantification of the proportion of imported Mycenaean wares versus local wares would have been useful for the better excavated areas (Voutsaki, 1999) or of other imported wares (e.g. Cypriot) and a conversion of such counts to densities within the total assemblage (Whitelaw, 1999).

2. When assessing demand and value the entire life cycle of the object should be considered (e.g. production in mainland Greece, dissemination into the Eastern Mediterranean and consumption at Ugarit) (Voutsaki, 1999).

3. An assessment of how the patterns of deposition of Mycenaean wares at Ugarit changed through time, given the "relatively tight chronology of Mycenaean styles" would have yielded a dynamic, rather than static picture (Whitelaw, 1999).

Cypriot Wares

Unlike Mycenaean ceramics, which are essentially of one type of fabric and method of production, Cypriot wares of the LBA are more diverse in character. The two principal fabrics found in the Levant are White Slip wares (almost exclusively bowls and kraters) and Base-Ring wares (mainly jugs and juglets) (Gittlen, 1981).

White Slip wares are divided into two groups (WS I and WS II) which span just over four centuries (late-17th – mid-12th centuries BC) (Karageorghis, 2001: 10). Nearly every site excavated in the Levantine coast from this period has yielded at least one WS sherd. The decoration of this ware consists of a white slip with dark geometric painted decoration. The majority of WS wares are found in domestic contexts in the Levant, which attests their use in daily life (Gittlen, 1981). An example of a white slip milk bowl from Ugarit is shown in Plate 2.

Base-Ring wares made their first appearance in the Levant in the LB 1A period (1550/40-1500 BC) (Oren, 2001). The ware resembles metallic vessels, being thin and with a shiny surface (Karageorghis, 2001: 9) and is divided into BR I and BR II. In contrast to White Slip wares, Base-Ring wares occur more frequently in funerary contexts than in habitation quarters. Ugarit has produced a number of fine pieces, including the rhyton with a bull's head illustrated in Plate 3. The repertoire found in Palestine is restricted compared with that in Cyprus, being mainly jugs and juglets. However, a broader range of shapes is found in Palestine than in Egypt, for example (Gittlen, 1981).

Other important LBA Cypriot imports into the Levant include White Shaved wares (mainly dipper juglets – which make up over 90% of the White Shaved repertoire in Palestine and a similar proportion in Cyprus – Gittlen 1981) and Monochrome wares.

Normalisation for Extent of Excavations

The term "ceramic find" is used in this thesis to mean a complete vessel or figurine or a significant part thereof (which may comprise several sherds). Where sherds are used to calculate percentages of imports, this is explicitly stated. As already stated, absolute numbers of ceramic finds at individual sites reveal next to nothing about the access of inhabitants of LBA polities to imported wares. Concentrations of finds per 100 sq m will therefore be calculated and used for inter-site comparisons of comparable domestic contexts.

Site Choice and Case Studies

Coastal Sites

Four major coastal sites have been analysed, one in each of the Levantine zones, along with Enkomi in Cyprus. The latter faces Ugarit across a 160 km stretch of sea. The purpose of selecting major coastal sites is to analyse access to imported ceramics at their point of arrival through maritime trade networks. Specifically, their availability to ordinary inhabitants, rather than the élite, is studied.

Inland from Sarepta

Given the case I have made that the Levant is too large and geographically diverse an area to be considered as a single zone of interaction, a case study within Zone L2 (Phoenicia) is presented to examine the inland movement of Mycenaean wares. Zone L2

was chosen for its anomalously high amounts of Mycenaean wares generally, and transport/storage vessels specifically, and its relative paucity of Cypriot wares (see below) compared with the other Levantine zones.

Contextual Comparison of Imported Ceramics

As described in Chapter 1, the Syro-Palestinian littoral and its hinterland is too large and varied a region to be considered as a single unit of analysis. For this reason, I have used terrain and access routes into the interior to define four zones (see Map 2). A major coastal site has been selected for study in each zone, namely Ugarit, Sarepta, Tell Abu Hawam and Ashdod. A database was constructed using FilemakerPro to hold the published information available on Mycenaean pottery on these sites to hold data on find context, shape, style and publication and to cross reference these to other extant catalogues (e.g. Leonard, 1994 and Van Wijngaarden, 2002).

My MA dissertation (Bell, 2001) analysed the imported ceramic repertoire from four Levantine coastal sites in the northern Levant. The sites analysed were Ugarit (Ras Shamra and its port Minet el-Beida), the nearby subsidiary palatial and port site of Ras Ibn Hani, Tell Sukas and Sarepta. Ugarit, Ras Ibn Hani and Tell Sukas are in Zone L1, while Sarepta was the only excavated coastal site suitable for such a study in Zone L2. This work revealed significant differences between the imported ceramic assemblage of Sarepta compared with those of the sites further north, both in terms of the quantity and the range of imported ceramics ordinary inhabitants had access to during their lifetimes. Table 4 summarises the overall picture for Mycenaean finds from all context types in these sites. These data sets have been updated to include publications since 2001. They are also shown graphically as percentages of the main Mycenaean shape classes recovered from these sites in Figure 4. The number of published vessels at Ras Ibn-Hani is very small at present and is not statistically significant. It will not be discussed further here, therefore.

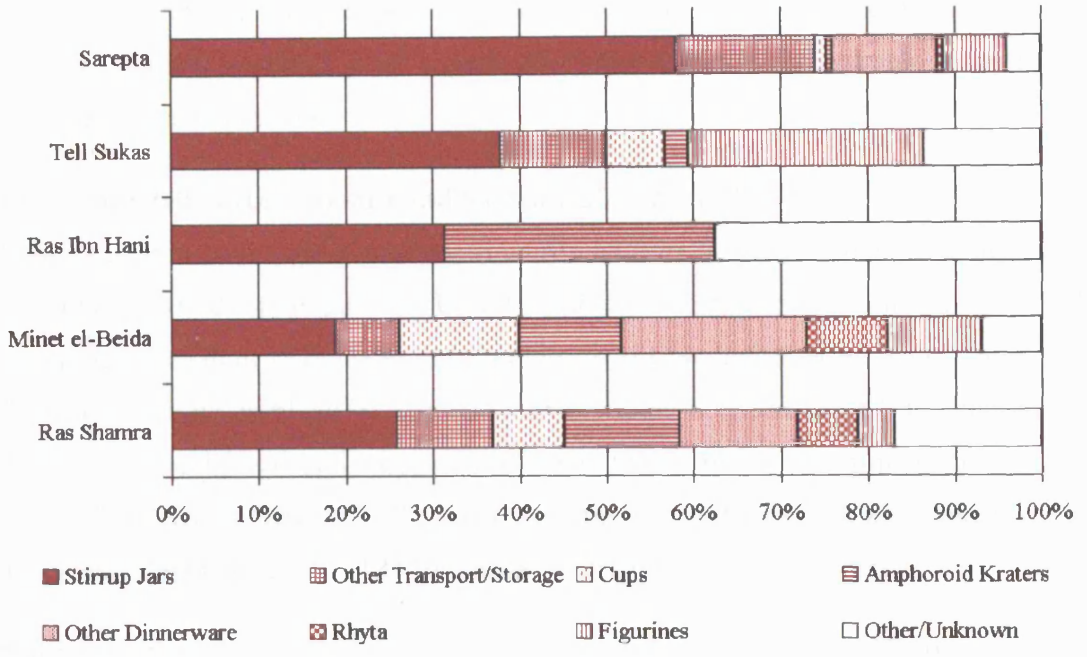
Table 4: Number of Mycenaean Finds in Selected northern Levantine Sites

	Ras Shamra	Minet el-Beida	Ras Ibn Hani	Tell Sukas	Sarepta
Stirrup Jars	225	38	5	28	87
Other Transport/Storage	98	15	0	9	24
Cups	72	28	0	5	2
Amphoroid Kraters	116	24	5	2	1
Other Dinnerware	118	43	0	0	18
Rhyta	60	19	0	0	1
Figurines	38	22	0	20	11
Other/Unknown	148	14	6	10	6
Total	875	203	16	74	150

Note: LH IIIC not included; all context types included. Source: Corpora Céramiques and RSO XIV for Ras Shamra and Minet el-Beida; Ras Ibn Hani I; Riis, 1970, Ploug, 1973 and Riis et al., 1996 for Tell Sukas; Sarepta I and III. Compiled in September 2004 – prior to the publication of RSO XV, which should add further finds to the Ras Shamra sample.

Figure 4 shows that stirrup jars dominate the assemblage at Sarepta (almost 60% of the assemblage) whereas elsewhere, they represent a significant, but much less important part of the overall corpus. For example, they represent less than 20% at Ugarit's port, Minet el-Beida and only slightly more in the city site at Ras Shamra, compared with well over half the finds at Sarepta. Tell Sukas, at the southern end of the Kingdom of Ugarit, lies between Ugarit and Sarepta, both geographically and in terms of the percentage of stirrup jars in the assemblage.

Figure 4: Percentages of Main Mycenaean Shapes in the Northern Levant



Source: Corpora Céramiques and RSO XIV for Ras Shamra and Minet el-Beida; Ras Ibn Hani I; Riis, 1970, Ploug, 1973 and Riis et al., 1996 for Tell Sukas; Sarepta I and III. . Compiled in September 2004 – prior to the publication of RSO XV, which should add further finds to the Ras Shamra sample.

Close to three quarters of Sarepta's Mycenaean assemblage is made up of transport/storage containers. This compares with 50% at Tell Sukas, 37% at Ras Shamra and 26% at Minet el-Beida. Unlike the other three coastal sites considered in my MA dissertation, Sarepta was *not* destroyed at the end of the LBA. Given the distinctness of its Mycenaean repertoire, this chapter will also consider the possible relationships between Sarepta and selected sites inland to investigate whether it acted as an import node for Mycenaean ceramics, particularly closed transport/storage vessels and their contents. A grant from the Palestine Exploration Fund enabled me to visit the University of Pennsylvania Museum of Archaeology and Anthropology in Philadelphia in June 2004 to photograph materials held there for study from Pritchard's excavations at Sarepta, of which Plate 5 and Plate 6 are examples.

As mentioned earlier, I believe that domestic contexts, where ordinary people lived, are the best context type to consider when making comparisons between sites across wide geographic areas. Although domestic contexts are probably not free from the influence of localised value systems, it seems probable that funerary and ritual contexts in LBA

Levantine cities are more likely to be particularised in this respect. Equally, the selection of items in élite residences is likely to be heavily influenced by factors other than the general availability of a particular artefact class, for example a desire for conspicuous consumption.

Ugarit (the tell of Ras Shamra and harbour of Minet el-Beida)

Ugarit has been excavated almost continuously for over 70 years. After the re-discovery of Minet el-Beida (the port of Ugarit – ancient Mahadu) by a farmer in 1928, excavations began in 1929 under the directorship of Claude Schaeffer, who continued to direct excavations until 1971. The site was occupied between the 8th millennium BC (Aceramic Neolithic) and the end of the LBA, but it is principally known archaeologically as the ruin of the LBA city that was destroyed and abandoned, which happened in approximately 1185 BC (based on Egyptian synchronisms).

Starting with a blank sheet of paper today, research design at Ugarit would be considerably different, as the range of analytical techniques routinely applied to the archaeological record has extended significantly since the advent of Processual Archaeology in the 1960s. For example, ceramic petrography (or at least the timely and systematic publication of the results thereof) is not a core part of publication of the results of excavations of this site even today (most recently illustrated by its absence from *Ras Shamra-Ougarit (RSO) XIII* (Yon et al., 2000)). Moreover, the importance of accurately recording contexts has increased further as Post-Processual analyses of the archaeological record over the past 20 years have expanded the interpretative scope for which the data are used (such as assessing how material culture is used to negotiate relationships between vassal and overlord and to assess the concept of value).

Where pottery was concerned, Schaeffer's focus seems to have been on the most impressive finds (principal among which were, fortunately, Mycenaean wares) rather than collecting and publishing the complete ceramic assemblage and recording contexts accurately. As a consequence of this, the early excavations at Ugarit created a false impression of a predominance of Mycenaean wares, leading Schaeffer to allude to the existence of a *Quartier égéen* in his early reports. This impression was finally laid to rest in print after the excavations of 1975 and 1976, when a study by Monchambert (1983) pointed out that Mycenaean and Cypriot wares *together* only amounted to 1% of

the total ceramics found in a particular domestic context at the end of the LBA, although the amounts in funerary contexts are substantially higher (Yon et al., 2000: 3).

Two publications (*Corpora Céramiques*) cover the ceramic corpus excavated during Schaeffer's directorship, namely Schaeffer's *Ugaritica II* (1949) – which catalogues finds between 1929 and 1938, and Courtois and Courtois' catalogue in *Ugaritica VII* (1978) – which lists finds made between 1959 and 1968. Unfortunately, very little was published on local wares prior to 1980 and it is also often impossible to assign some Mycenaean and other imported sherds to a find spot from records that date to this era.

Marguerite Yon assumed directorship of excavations in 1978 and so far 14 volumes in the *RSO* series have appeared, adding greatly to scholarship both in the field of textual studies and archaeology. She recently retired from directing the excavations in the field, and is now concentrating on publication, while her brother, Yves Calvet, assumed the directorship.

Table 5 details the excavation areas at Ugarit, their approximate area and the principal contextual groupings found in each.

Table 5: Ugarit - Principal Excavations

Main Excavation Areas	Area (sq m)	Context Type(s)	Date of Excavation
Minet el-Beida	N/A	Funerary/Domestic	1929-1935
Acropole	15,000	Religious/Domestic/Funerary	1929-1937
Sud Acropole	8,900	Domestic/Funerary	1961-64
Palais Royal	7,000	Palatial/Funerary	1939-1955
Quartier Résidentiel	6,900	Domestic/Funerary	1953-58, 1972-73 etc
Quartier Nord-Ouest	6,300	Domestic/Funerary	1937, 1969-72
Ville Basse O & E (Chantiers A & B)	6,000	Domestic/Funerary	1932-39
Ville Sud	5,700	Domestic/Funerary	1959-60
Centre de la ville	1,600	Domestic/Funerary/Religious	1978-94
Chantier C	1,200	Domestic	1936
Palais Sud	1,100	Palatial	1954-55, 1964-65
Tranchée Terasse Est	1,100	Domestic	1950, 1959
Quartier Sud-Centre	800	Domestic/Funerary	1986-present
Résidence NO du tel (Villa NNO)	850	Palatial (élite domestic)	1975-76

Source: Excavation Reports; Yon, 1997a. Areas estimated from plans, where none given in excavation reports. N/A = not available.

Ceramic finds from the period 1978-1984 have been published in *RSO III*. In addition, *RSO XIII* documents 496 sherds, mostly unpublished, from Ras Shamra and Minet el-Beida. These finds are held at the Louvre as part of a study collection transferred there

after Schaeffer's death. This adds significantly to the previously published corpus, which I calculate to have been 617 finds (broadly in line with Van Wijngaarden's figure of 616 (Van Wijngaarden, 1999, 2002). Few provenience studies have been undertaken and the majority of Mycenaean wares are attributed to the Argolid on the basis of visual characteristics. Hirschfeld (2000a) suggests that some may also have come from Crete, the Dodecanese and Cyprus but even this recent publication does not contain the results of clay analyses. Koehl (2001: 548) rightly points out that this would have *"immeasurably increased"* the value of this publication.

I have incorporated the Mycenaean vessels from *RSO XIII* into my database (which are not included in Van Wijngaarden, 2002) and have also added the Mycenaean and Cypriot ceramics published in *RSO XIV* in 2002 from Centre de la ville excavation, bringing the total at Ras Shamra to 875 finds and Ugarit as a whole (Ras Shamra and Minet el-Beida) to 1083 (including 5 pieces whose provenience cannot be ascribed to either of these two sites that came from Schaeffer's early excavations). Plate 4 shows a typical page from the Mycenaean pottery database I have constructed. This database also contains references to the catalogues of Leonard and Van Wijngaarden (Leonard, 1994; Van Wijngaarden, 2002) and any other major publications (such as *RSO XIII*) that have ascribed catalogue numbers to the finds.

Centre de la ville, Ras Shamra

The issues with regard to the stratigraphy of Ugarit, and accurate recording of contexts, during the first 40 years of excavation have already been mentioned. Consequently none of these areas is suitable for use in this study. In selecting an excavation area of a domestic context at Ras Shamra, therefore, the choice narrowed down to those excavated after 1970. Of the 24 hectares tell area, some 6 hectares have been exposed, of which only 3000 square metres represent previously untouched areas that have been excavated since 1970.

The Centre de la ville area, excavated between 1978 and 1994 and published in *RSO III* and *RSO XIV*, gave Marguerite Yon and her team the chance to excavate a virgin area high on the tell and at its geographic centre (see Map 3). This excavation area (see Map 4) has yielded remains of a number of houses (not mansions, by Ugarit standards), a cult place (the Temple aux Rhytons – so called because of the large number of rhyta found there, including 11 Mycenaean ones), tombs integral to houses (dating to the

MBA/LBA) as well as evidence of industrial activities, especially olive oil manufacture (Yon, 1997a: 92).

From plans, I estimate an area for the excavations covered by *RSO III* and *RSO XIV* to be approximately 1425 sq m out of a total reported for the excavation area of 1,600 sq m (see Table 5). The Temple aux Rhytons, which must be excluded from analysis as it appears to be an unambiguously religious/ritual context, covers some 170 sq m. Consequently, 1255 sq m has been used to normalise the absolute quantities of finds for extent of excavation.

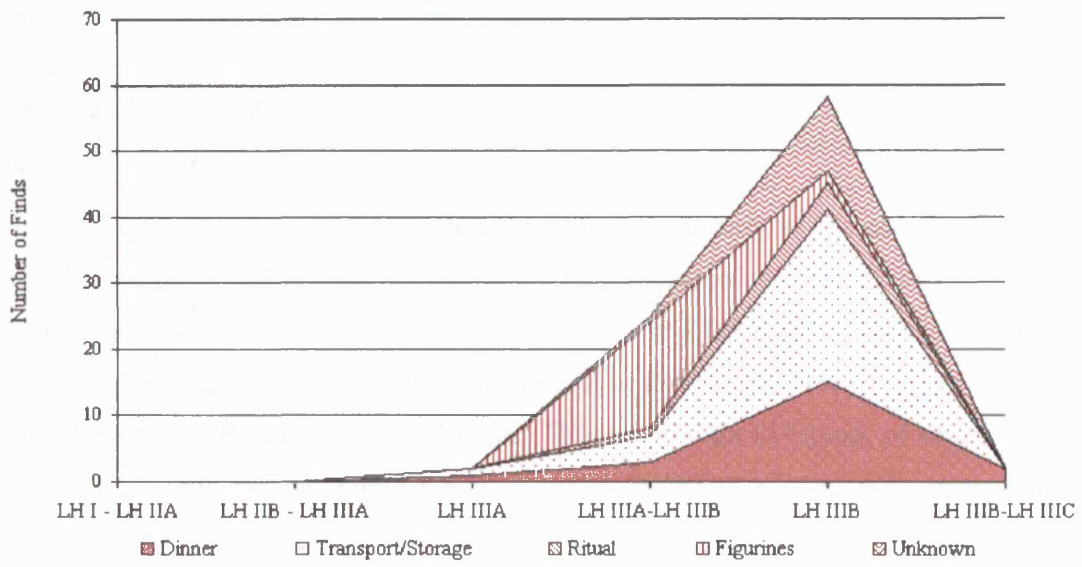
The discussion that follows examines the quantities of different styles of Mycenaean wares found in this domestic context as well as the breakdown of the Mycenaean finds by function; the same template and terminology is followed for the other sites.

Mycenaean Ceramics

Figure 5 shows the distribution of Mycenaean styles found in domestic contexts at Centre de la ville. When examining this graph, and the ones that follow in the same format for other sites, the LH IIIA-IIIB and LH IIIB-IIIC categories should be noted. Where scholars have ascribed finds to a range of styles, rather than a specific style, I have not deviated from their attributions to force wares into only one LH style. The x axis of these charts, therefore, should not be read linearly in terms of time, not least because the styles themselves endure for differing periods.

87 Mycenaean vessels or figurines, either whole or fragmentary (referred to collectively as finds) were found in domestic contexts in the Centre de la ville area. These have been classified into broad functional groups discussed earlier, namely dinnerware, transportation and storage vessels, figurines and ritual vessels. Following Leonard's broad classification (Leonard, 1994: 128), as a first approximation unidentifiable closed forms have been included in the totals for transportation and storage vessels and unidentifiable open forms in those for dinnerware. Nothing has been found earlier in style than LH IIIA and the majority of the finds belong to the LH IIIB period, whose end is generally considered coterminous with that of the LBA.

Figure 5: Centre de la ville Mycenaean Styles and Functional Categories



Source: RSO III, RSO XIV and Leonard, 1994.

It is interesting that all the figurines in Centre de la ville were found in or around houses, rather than in the Temple aux Rhytons (Monloup, 1987: 313). The data presented confirm the wide availability of Mycenaean ceramics, both dinnerware and transport/storage containers, to the inhabitants of this ordinary domestic quarter of Ras Shamra.

The concentration of Mycenaean pottery finds calculated on this basis per unit area of excavation is 7 pottery finds per 100 sq m of excavation (87 finds/1255 sq m of exposure).

Cypriot Wares

Data have been published for four houses in Centre de la ville in *RSO III*: 11-127 (Maisons A, B and E) and in *RSO XIV*: 83-190 (Maison au Sud du Temple aux Rhytons). Unfortunately, local wares have only been partially published and consequently the tables that follow of comparative amounts of Cypriot and Mycenaean wares cannot be used to calculate any percentages.

Table 6: Centre de la ville – Comparison of Published Imports

House	No. of Mycenaean Finds	No. of Cypriot Finds
Maison A	7	6
Maison B	4	5
Maison E	3	6
Maison au Sud du Temple aux Rhytons	34	81
Total	**48**	**98**

Source: RSO III: 11-127; RSO XIV: 83-190

Cypriot wares appear to slightly outnumber Mycenaean ones in the sample from the three houses published in *RSO III.* However, the publication of *RSO XIV* in 2002 added a substantial sample of both wares, but particularly of LBA Cypriot wares, which are more than twice as abundant as Mycenaean wares in that sample. They comprise mainly Base-Ring bowls, flasks and jugs (25 items), White Slip ware (43 items, of which 41 are milk bowls), with the remainder being examples of White Shaved and monochrome wares.

Given both the proximity of Cyprus, 160 km away by sea, and the textual evidence of close trading contacts between the two areas, this is probably what one should expect – especially in an ordinary residential quarter such as this one where the inhabitants would be less likely to have access to exotica than those inhabiting palatial areas or large mansions.

Sarepta

Sarepta lies on a low mound on the Lebanese coast 50 km south of Beirut near the modern village of Sarafand and roughly equidistant between Sidon and Tyre. The site was excavated between 1969 and 1974 by James Pritchard of the University of Pennsylvania with the specific goal of documenting the stratigraphy of a Phoenician urban site in their homeland and identifying a Phoenician city known from texts.

No site in Lebanon had produced well-stratified evidence of occupation between 1200 and 600 BC prior to this (Pritchard, 1978: 11). The tell was chosen for investigation as tomb contents (pottery of LB II date) were believed to have come from this area and had been identified in the Museum of the American University in Beirut. Thirty years on, Sarepta remains the only coastal city of this period to be extensively excavated in Lebanon, although excavations are now underway at Sidon again under the direction of Claude Doumet-Serhal.

Area II yielded remains of LBA and Iron Age occupation from two soundings. Within this area, Sounding X revealed a continuous sequence of occupation from the 13th – 6th/5th centuries BC. The area excavated was an industrial quarter (with the exception of a small shrine). 22 kilns were found, attesting a specialised pottery industry in addition to purple dye and olive oil manufacture and other industrial activities. There was no sign of destruction in any of the strata excavated, indicating that Sarepta did not experience the same fate as Ugarit, Tell Abu Hawam, Ashdod or Enkomi at the end of the LBA.

Sounding Y, located approximately 100 m SW of Sounding X, in contrast, was a mainly residential area, containing what Pritchard described as "modest homes" (1978: 74).

Table 7: Sarepta – Principal Excavations

Exposure	Area (sq m)	Context(s)	Date
Area II Sounding X	800	Industrial/Domestic	1969-1974
Area II Sounding Y	100	Domestic	1969-1974

Source: Pritchard, 1978

Sarepta I details the LBA and Iron Age strata of Area II, Y while *Sarepta II* details the LBA and Iron Age periods of Area II, X, concentrating on four 5 m square plots within the 800 sq m of sounding II, X (see Map 5). This area was chosen for particular study as it was excavated to bedrock and was considered to contain the most undisturbed stratigraphy in Sounding II, X. *Sarepta III* (Koehl, 1985) covers the LBA and Iron Age *imported* wares of Sounding II, X. The use of the word *import* does not necessarily suggest that the wares originated in a different area but is used to cover Cypriot and Mycenaean wares.

In contrast to the early excavations at Ugarit, the Sarepta expedition meticulously recorded *all* pottery finds and the final excavation reports provide a complete picture of the assemblages of the two soundings that penetrate the LBA/Iron Age transition. However, no significant provenience studies have been carried out on the Mycenaean wares, which upon visual examination of fabrics, slips and forms seem to conform with those found in Mainland Greece, particularly the Peleponnese (Koehl, 1985: 145).

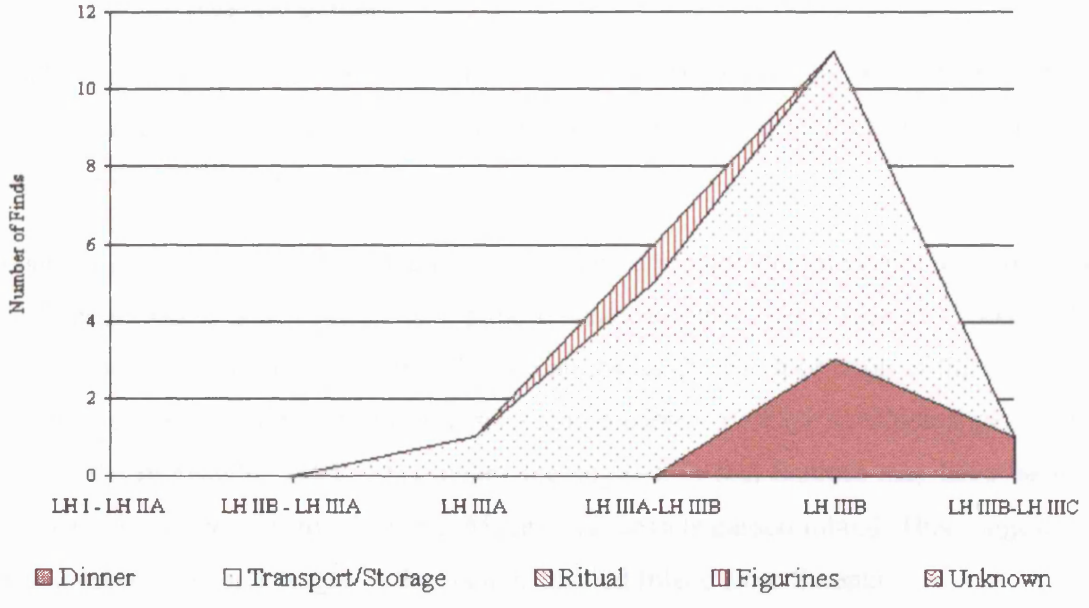
Mycenaean Wares

Area II, Y

Area II, Y at Sarepta seems to be a similarly ordinary domestic quarter to Centre de la ville at Ras Shamra during the LBA. This area lies at the highest part of the mound in a position not dissimilar to that of Centre de la ville at Ugarit. The scale of the excavation is an order of magnitude smaller, however, with only 100 sq m exposed.

As already stated, in order to concentrate on Mycenaean wares where the majority were of mainland Greek or Aegean origin, no LH IIIC wares are included in Figure 6. The same policy is adopted towards all the other sites that follow. The excavations at Sarepta did produce examples of these wares, in contrast to Centre de la ville – which has not produced any Mycenaean pottery after the LH IIIB/IIIC transition (end of the LBA). The number of Mycenaean finds from Area II, Y is only 19, but as the area of excavation was only 100 sq m, this converts to a concentration of 19 finds per 100 sq m of excavation (over twice that of Centre de la ville). As can be seen in Figure 6, the assemblage looks strikingly different from that at Ugarit, with a dominance of transport/storage containers.

Figure 6: Sarepta Area II, Y Mycenaean Styles and Functional Categories

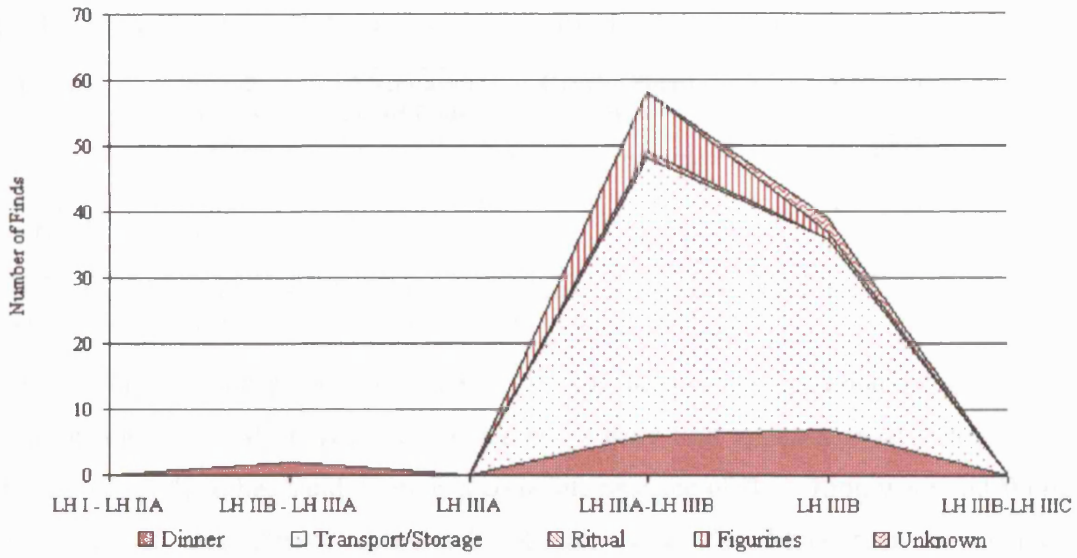


Source: Leonard, 1994; Sarepta I.

Area II, X

Because the absolute number is small, but also as Centre de la ville at Ugarit contained evidence of industrial activities, a comparison has also been made with Sarepta Area II, X. Figure 7 shows a similar profile of shapes and styles to those excavated in the smaller Area II, Y.

Figure 7: Sarepta Area II, X Mycenaean Styles and Functional Categories



Source: Leonard, 1994; Koehl, 1985.

Excluding LH IIIC wares, 99 vessels (either whole or fragmentary) were recovered here in an excavation of 800 sq m. Consequently, the concentration of vessels in this area is 12 vessels per 100 sq m.

Transport/storage vessels, particularly stirrup jars, dominate the repertoire in both areas at Sarepta, which is in contrast to the more balanced mix of uses seen at Centre de la ville. Stirrup jars are usually held to be containers for the transportation of liquids, with the smaller varieties believed to be vessels for valuable – perhaps sometimes, perfumed – oils. Koehl (Koehl, 1985: 144) makes the suggestion that Sarepta may have been a *"distribution center"* through which Mycenaean vessels passed inland. This suggestion is discussed at greater length in the section entitled Inland from Sarepta

Cypriot Wares

Better-published data exist in the final reports for Sarepta, where all classes of ceramics recovered have been quantified and published. An interesting picture emerges. Trends can be analysed for each stratum at Sarepta for each of Areas II, X and II, Y, but the disturbed stratigraphy of Area II, X means that only a 100 sq m subset thereof is appropriate for such analysis (published in *Sarepta II)*. Table 8 shows the data for Area II, Y, the purely residential quarter while Table 9 that for the subset of Area II, X.

Table 8: Sarepta Area II, Y - Comparison of Published Imports

Stratum	Overall Imports %	Mycenaean Sherd Count	Cypriot Sherd Count	Excavators' Chronology (BC)
H	4.30	3	51	~1425/1400-1320/1290
G1	0.52	17	9	1320/1290-1200/1190
G2	0.47	8	6	
F	0.25	3	4	1200/1190-1150/1125

Source: Anderson, 1988: Table 2B; 18. Imports calculated on a % of rim sherds. Mycenaean + Cypriot counts include all types of sherds. . Chronology from Anderson, 1988: 422-423.

During period H (and the preceding period J – not shown), there is a marked increase in Cypriot imports, while Mycenaean wares make their first appearance at this time. In stratum G, on the other hand, there is a complete absence of Base-Ring ware and White Slip ware is also almost completely absent, while the Mycenaean count rises substantially, and exceeds the total number of Cypriot wares. Over the whole period, the percentage of imports declines substantially.

Table 9: Sarepta Area II, X - Comparison of Published Imports

Stratum	Overall Imports %	Mycenaean Sherd Count	Cypriot Sherd Count	Excavators' Chronology (BC)
II	1.43	10	7	~1425/1400-1320/1290
III	1.04	29	6	1320/1290-1200/1190
IV	0.87	7	4	
V	0.64	10	9	1200/1190-1150/1125

Source: Khalifeh, 1988: Tables 1A/B; 2B. Based on the total number of excavated sherds from a 100 sq m area within Area II, X. Imports calculated on a % of rim sherds. Mycenaean + Cypriot counts include all types of sherds. Chronology from Anderson, 1988: 422-423.

As with Sounding Y, imports decreased through time at Sounding X also (see Table 9). Stratum II marked the peak of imports and the frequency of Cypriot LBA sherds dropped over the first three strata, while the proportion of Mycenaean greatly increased

after c. 1350 BC – according to the chronology of the excavators at Sarepta. Mycenaean sherds outnumbered Cypriot ones throughout the period considered.

Tell Abu Hawam

Tell Abu Hawam, close to the modern city of Haifa in Israel, is located on the mouth of the Qishon River north of the Carmel ridge. It was a major port city during the LBA and its location is strategic, being halfway between Cyprus and the Nile Delta (see Map 6). It is also situated at the coastal end of a major overland trade route that led through the Jezreel Valley to the Jordan Valley serving important inland centres such as Megiddo (see Map 2). The settlement covered at least 4 hectares, while burials around it are scattered over an area of 32 hectares (Balensi et al., 1993). It was selected for analysis because of its prominence in LBA trade as evidenced by the large quantities of Mycenaean and Cypriot wares found there (see Table 1). Sites such as Tel Dor nearby, which are discussed in Chapter 5, have little in the way of published LBA excavations so far.

The first major excavations at Tell Abu Hawam took place in 1932 and 1933 (during the British Mandate) under Hamilton, which produced a stratigraphy for the site spanning the MBA to the Roman Period. These were rescue excavations, and unfortunately approximately half of the tell had been destroyed by a local public works contractor before Hamilton started work. Balensi (1985) subsequently revised the stratigraphy based on the French and Israeli excavations that took place between 1984 and 1989.

Artzy (2002) carried out a salvage excavation in 2001 on the north side of the tell under a major modern road – an area that had not been excavated before. This produced a wide range of imported wares, which are, as yet, unpublished. Imports were mainly Cypriot and Mycenaean IIIA/B wares as well as some Anatolian Grey Minyan and Minoan sherds from LBA levels. There were only a few local wares recovered, and Artzy believes she was excavating a *"garbage dump"* (*ibid.*).

In terms of absolute numbers of Mycenaean finds, Tell Abu Hawam is second only to Ugarit among the sites of the Levantine Coast, having produced over 700 Aegean ceramic imports (Balensi, 1985), of which 415 were listed in Leonard (1994). The material belonging to the last phase of the LBA (Stratum VC) was very fine and international in character (Dever, 1997a) and resembles the impressive range of ceramic

finds made by Artzy in 2001. Like Ugarit, Tell Abu Hawam was destroyed at the end of the LBA (Stratum VC has a destruction layer). Unlike Ugarit, however, it was reoccupied in the Iron Age, when its material culture becomes influenced by Phoenicia to the north. Balensi (1980: 596) comments that there was very little Mycenaean ware of the *"Style Rude"*, which suggests that the site may have been destroyed before Enkomi or Ugarit (possibly before the end of the 13th century BC).

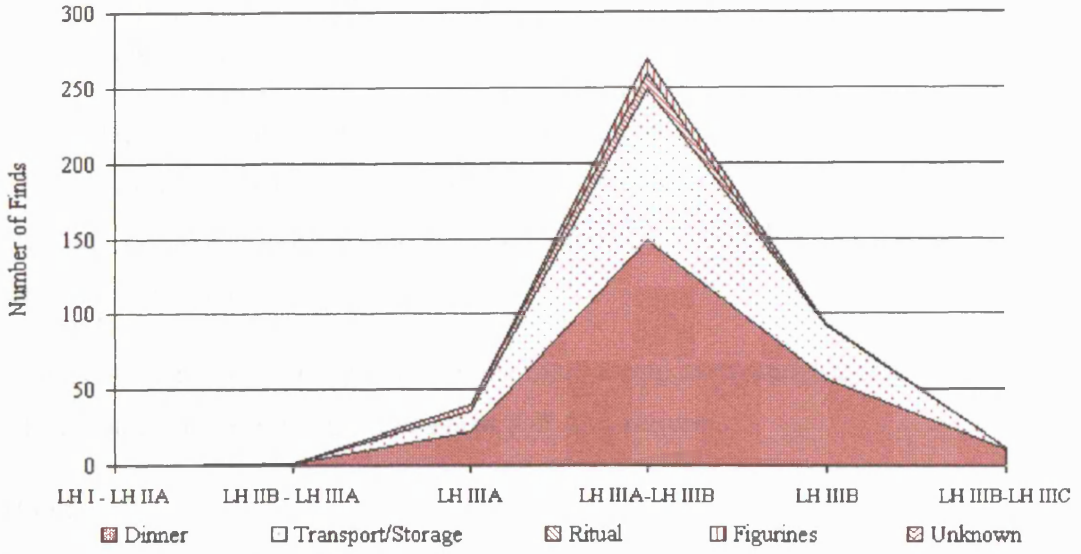
Mycenaean Wares

Provenience work has been carried out on 85 Mycenaean finds, which were mainly LH IIIB in style (Asaro and Perlman, 1973: 222-223), using Neutron Activation Analysis (NAA). All but two were assignable to known comparanda. Sixty eight mapped to Argolid production, two further samples to Tiryns specifically, 15 more to the Peleponnese generally and three to Crete (Chania). Asaro and Perlman (1973: 223) considered that:

" ... it would seem that the Mycenaean settlement of Tell Abu Hawam had rather specific connections with the Mycenaean mainland."

Balensi's work (1980) has shown that Mycenaean wares were common across the whole of the area excavated by Hamilton. This area included residential and industrial buildings, as well as a citadel building, with fortifications, and a temple (Van Wijngaarden, 2002: 111) and covers an area of approximately 1300 sq m. Unfortunately, as already mentioned, although 700 vessels are referred to (Balensi, 1985), only 415 have been published. Given this, and the quality of the published excavation records, it is not meaningful to produce a concentration per 100 sq m of excavation for a domestic context at Tell Abu Hawam. Nevertheless, Figure 8 is included to give a general impression of the published record. Balensi's later publications give a consistent impression of the proportions of vessel types and the importance of dinnerware (e.g. Balensi, 1985).

Figure 8: Tell Abu Hawam Mycenaean Styles and Functional Categories



Source: Leonard, 1994; Balensi, 1980.

The dominance of wares used for dining is striking, especially when compared with Sarepta, some 70 km to the north. If the stirrup jar dominates the Sareptan assemblage (57% of the vessels in domestic contexts), then drinking cups of various descriptions make up 30% of the assemblage at Tell Abu Hawam (while vessels used for dining in total represent 57%). As the vessels used in the consumption of food and drink are closely tied to the creation of cultural identity (Steel, 2002: 26), it may be this that led Asaro and Perlman (1973: 223) to construe (consciously or unconsciously) that there was a *Mycenaean settlement* at Tell Abu Hawam. More recent scholarship tends to view Tell Abu Hawam as a trading emporium (e.g. Artzy, 2001).

Cypriot Wares

As is the case in the other coastal sites discussed in this chapter, Cypriot and Canaanite wares co-exist at Tell Abu Hawam before the arrival of Aegean wares (Balensi, 1985). If others have considered Tell Abu Hawam to be a Mycenaean settlement, it was Hamilton's view that the culture of the site was mainly Cypriot (Hamilton, 1935). Possibly because few of the Cypriot finds were restorable, fewer have been published (about 200) in Balensi's 1980 publication than have Mycenaean wares.

Artzy (2001) notes this fact and cites a lecture given by Balensi in which she mentions that in a particular stratum of the later LBA, 40% of the ceramic finds were Cypriot imports, while fewer than 1% were of Mycenaean origin. Artzy goes on to say that work

done in 1986 on unstratified finds from Hamilton's dumps indicates a similar ratio of Cypriot to Mycenaean finds. The large majority of these finds are White Slip II bowls, with very few examples from other Cypriot wares.

At Tell Abu Hawam, therefore, like Ugarit, the relative frequency of Mycenaean wares to Cypriot wares has been exaggerated, with the idea of a Mycenaean settlement peppering the early literature. Cypriot wares also far outnumber Mycenaean ones at nearby Tell Akko (Artzy, 2001).

We must await further publication from the more recent excavations before quantitative analysis can be made of the assemblage at Tell Abu Hawam.

Ashdod

Ashdod was a major port during the LBA in the southern Levant and has been selected for analysis as a representative port for this zone due to the absence of published LBA strata at Ashkelon. Moshe Dothan, on behalf of the Israel Department of Antiquities, excavated the site between 1962 and 1972 and occupation levels were identified that spanned the MBA to the early Arab period. The site covers approximately 36 hectares (an 8 hectare 'acropolis' and a lower town that covers some 28 hectares).

Textual evidence suggests that Ashdod produced textiles, from which dyed garments were manufactured and traded (Dothan, 1967: 18). In addition, Ashdodites are known both to have traded with Ugarit and to have lived there (Dothan, 1993, Dothan 1967: 18).

Nine seasons of excavation were carried out and, although much of the focus of the excavation was on Iron Age levels, areas B and G on the site (see Map 7) produced LBA remains (Strata XIV-XVII). Stratum XIV was violently destroyed towards the end of the 13th century BC due to the activities of the *Sea Peoples* (Dever, 1997b).

In Area B, Strata XIV and XV appear to have the architectural elements of a habitation quarter (brick buildings and stone pavements – possibly courtyards and streets). Stratum XIV (the last LBA phase) is heavily disturbed in Area B, but in Area H (which penetrates to this level, but no further) there was a thick destruction layer dating to the late 13th century BC, indicating that Ashdod shared a similar fate to Ugarit and Tell Abu

Hawam. Ashdod was rebuilt with little delay and remains characteristics of the Philistine material culture appear in level XIII (notably Mycenaean IIIC: 1 pottery).

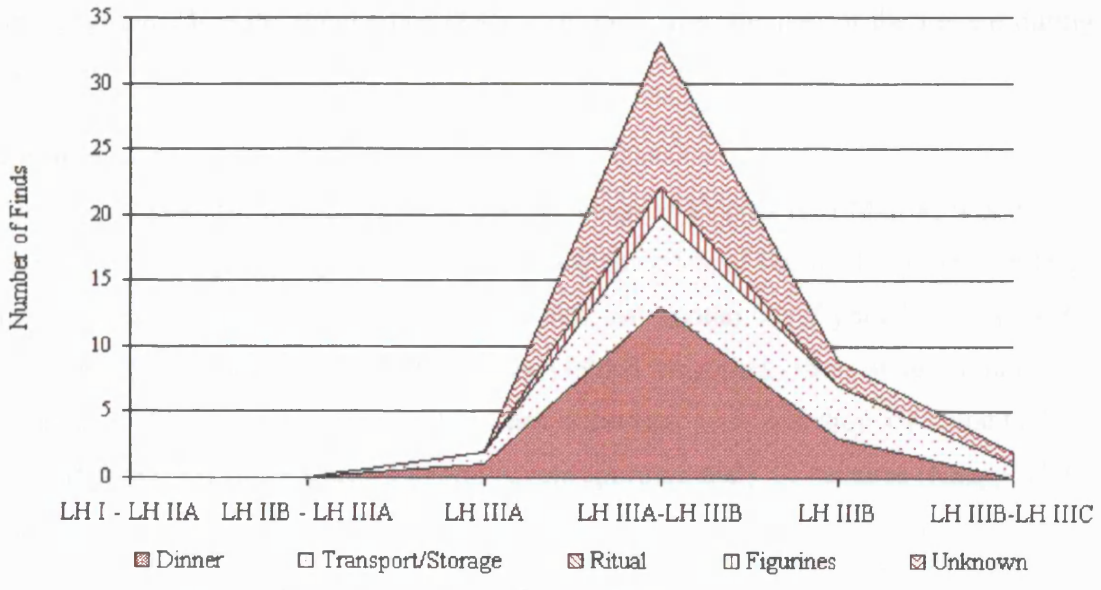
The discussion that follows concentrates on Area B, an area of 400 sq m. This area is the only area with domestic contexts dating spanning the LBA that is fully excavated. However, as mentioned earlier, its uppermost LBA level was disturbed, which possibly means that the recovery of ceramics from that layer is likely to be understated.

Mycenaean wares

Provenience studies (Asaro and Perlman, 1973: 223-224) unfortunately concentrated on Mycenaean IIIC:1 (the fore-runner of Philistine bichrome) and only 11 LH IIIB sherds were analysed. Six of these were attributed to the Argolid, while a further three had close parallels in Thebes.

Area B generated 46 Mycenaean finds (either whole or fragmentary). As may be seen from Figure 9, these are mainly dinnerware. No rhyta were found in Area B (or anywhere else at Ashdod), but a modest number of figurines were found.

Figure 9: Ashdod Area B Mycenaean Styles and Functional Categories



Source: Dothan, 1967, Dothan and Porath, 1971; Leonard 1994.

This represents a concentration of Mycenaean finds in Area B of 11.5 finds per 100 sq m (46 finds in 400 sq m).

Cypriot Wares

As was the case at Tell Abu Hawam, the excavation reports have not published all Cypriot finds from the excavations of Area B at Ashdod. Accounts of ceramic finds in the excavation reports (Dothan, 1967; Dothan and Porath, 1971) suggest that Cypriot wares are more plentiful than Mycenaean wares. An example of this would be Stratum 3 (Stratum XVI elsewhere on the tell and belonging to LB II) (Dothan, 1967: 76):

"We have a few pieces of Mycenaean ware... Cypriote pottery is well represented"

He then goes on to describe several examples of White Slip II bowls that have been chosen to illustrate the group and to say that Base-Ring wares were also well represented. Although this is another example where the relative importance of the wares has not been recorded adequately for more precise analysis, it is nevertheless possible to clarify that Cypriot wares outnumber Mycenaean ones in this domestic context at Ashdod.

Recent excavations at Tell el-'Ajjul, also on the coast of Zone L4 and located near modern Gaza, have revealed a similar situation (Fischer, 2001). Two seasons of excavation in 1999 and 2000 yielded a total of 941 imported sherds, of which 830 were Cypriot in origin and only one could be securely identified as Mycenaean (*ibid.*). This serves to underline the importance of Cypriot trade with this part of the Levant during the LBA.

Enkomi

The site of Enkomi, located close to the east coast of Cyprus (see Map 8) was chosen for study for its proximity to Ugarit, from which much of the tin for Enkomi's large metal industry would have come. As well as containing Cyprus' richest LBA cemeteries, the town site of Enkomi has yielded two excavation areas of domestic contexts that have been well excavated and published such that they are suitable for a quantitative study of ceramics. Enkomi covers approximately 16 hectares (Knapp, 1997: 54).

Excavations carried out by the French/Cypriot Mission between 1948 and 1958 and published by Dikaios (1969 – 1971) produced two areas that contain domestic contexts suitable for inter-site comparisons, namely Q1W (which Dikaios called Area III) and

Q4W (Dikaios' Area I). Between them, these two excavation areas produced 330 Mycenaean vessels (either whole or fragmentary) in domestic contexts. This compares with 1472 published Mycenaean finds (1466 vessels and 6 figurines) from the whole site listed by Van Wijngaarden in a recent catalogue (Van Wijngaarden, 2002: Catalogue V). These finds obviously do not represent the entire sample excavated at Enkomi. For example, the French excavations directed by Schaeffer between 1934 and 1947 (who was also directing excavations at Ugarit at the time) are not fully published. Furthermore, prior to the arrival of the British Museum on the site in 1896, Enkomi had been the subject of much 'amateur'/illegal excavation activity, the results of which are surely to be seen, lacking provenience, in collections around the world.

Dikaios' excavations dated a severe destruction layer to approximately 1230 BC (Level IIB – see Table 10 and Table 11) that took place while LH IIIB pottery prevailed at the site, and before LH IIIC made its first, and massive, appearance (Level IIIA). The town was rebuilt on a new pattern, using ashlar architecture, perhaps 20 years later (Dikaios, 1971: 513).

Mycenaean Pottery

As is the case at Ugarit, Mycenaean pottery is found all over the city of Enkomi. The early focus on tombs by successive British, Swedish and French expeditions gives a misleading impression that Mycenaean wares were principally used in funerary contexts at Enkomi. When Dikaios' completely published excavations of Q1W and Q4W are analysed, Mycenaean ceramics found in domestic contexts outnumber those found in tombs (Van Wijngaarden, 2002: 135). This is an important point as even recent literature (e.g. Steel, 1998) often contain statements that Mycenaean wares are rare in settlement deposits in Cyprus and are much more prevalent in funerary settings.

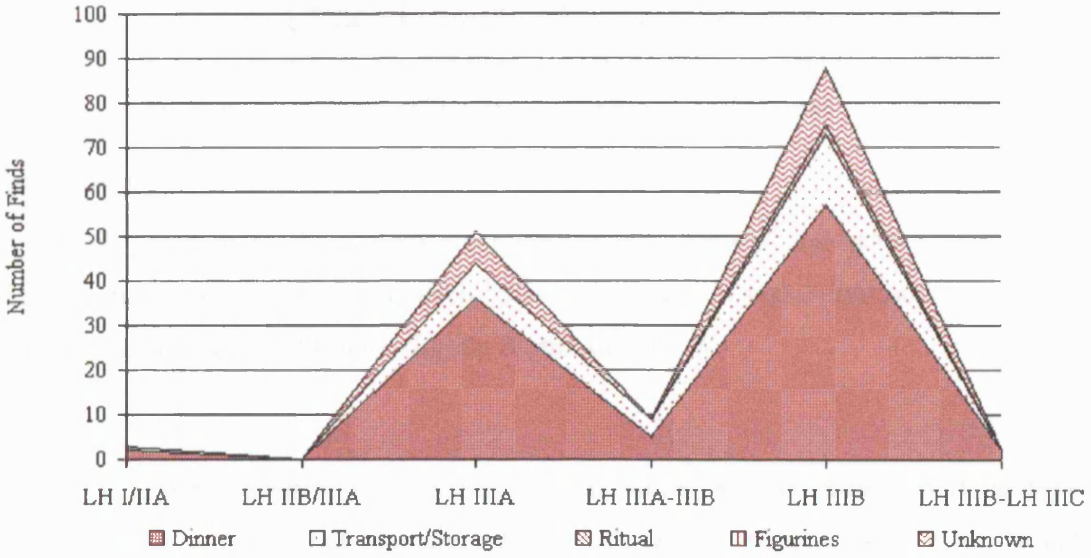
Asaro and Perlman (1973: 221) carried out the largest provenience study, which consisted of 16 LH IIIA, 33 LH IIIB, and 30 LH IIIC:1 wares. A quarter of the LH IIIA wares had signatures that mapped to sites in the Argolid, while the remainder were simply assigned to mainland Greece. The picture was similar for LH IIIB wares, except that the proportion from the Argolid was higher. In contrast, LH IIIC:1 wares (30 specimens) appear to have been of local manufacture from several different sites.

The city of Enkomi was laid out on a regular grid plan and Map 8 locates Q1W and Q4W within it. Interestingly, no structures that resemble palaces have been identified during excavation.

Q1W

Q1W, an excavation area of approximately 1400 sq m, yielded 153 Mycenaean wares within domestic contexts. No figurines were found, and only 2 rhyta. The vast majority, about two thirds, (67%) was dinnerware.

Figure 10: Enkomi Q1W Mycenaean Styles and Functional Categories



Source: Dikaios, 1969.

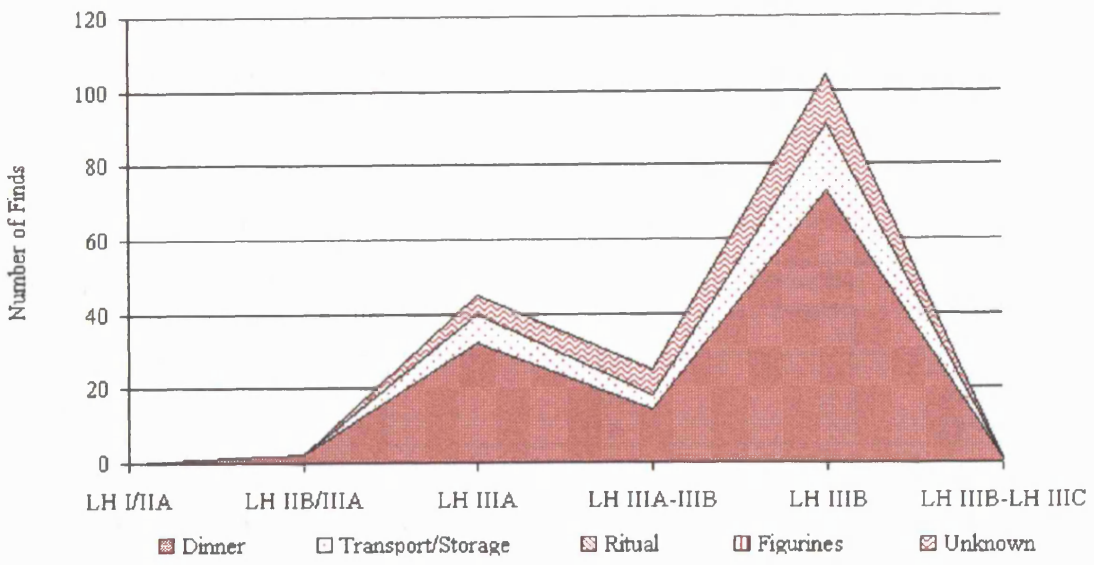
This contrasts strongly with the data from Enkomi's tombs, where 82% of Mycenaean vessels were transport/storage wares (Van Wijngaarden 2002: 140 – Table 10.8), and underlines the need to separate context types to achieve meaningful comparative results and before making generalisations about the nature of the assemblage. The early focus of excavation of the tombs, therefore, gives a misleading impression that the assemblage at Enkomi was mainly transportation/storage containers.

This represents a concentration of Mycenaean finds in Q1W of 11 finds per 100 sq m.

Q4W

Q4W, an area of 1300 sq m located close to the centre of the site, yielded a similar domestic context to Q1W. Among the ceramic finds were 177 Mycenaean vessels.

Figure 11: Enkomi Q4W Mycenaean Styles and Functional Categories



Source: Dikaios, 1969.

As was the case in Q1W, dinnerware predominates (69% of the assemblage) while figurines and ritual vessels are entirely absent. In terms of concentration, this sample represents 14 finds per 100 sq m, slightly higher than Q1W.

Other Imports

Obviously, it is inappropriate to consider Cypriot wares at Enkomi as imports as they form the domestic assemblage, but Dikaios' records allow both Mycenaean imports and those from Syro-Palestine to be examined by stratum for each of the two areas.

Table 10: Enkomi Q1W Mycenaean and Syro-Palestinian Pottery

Stratum	Myc. I-IIIB (Imports) %	Myc IIIC %	Levantine Imports %	Excavators' Chronology (BC)
Level IIA	4.8	0.0	6.0	1425-1300
Level IIB	18.5	0.0	10.9	1300-1230
Level IIIA	11.0	48.0	2.0	1230-1190

Source: Dikaios 1971 (Volume II)

Level IB, not shown, marks the first appearance of Mycenaean wares in Q1W (3 examples), which are insignificant in terms of overall percentages. Both Levantine and Mycenaean imports rise in Levels IIA and IIB, but by level II B, Mycenaean wares have overtaken Levantine ones by a considerable margin.

Anatolian grey ware appears (0.5%) in Level IIIA, but the key event of Level IIIA is the appearance of LH IIIC wares. The latter becomes the dominant assemblage in this level, the majority of which are locally made. The picture is consistent in Q4W, although Mycenaean wares exceed Levantine ones in this area from the outset, as can be seen from Table 11.

Table 11: Enkomi Q4W Mycenaean and Syro-Palestinian Pottery

Stratum	Myc. I-IIIB Imports %	Myc IIIC %	Levantine Imports %	Excavators' Chronology (BC)
Level IIA	9.9	0.0	6.9	1425-1300
Level IIB	19.9	0.0	10.8	1300-1230
Level IIIA	9.0	45.0	3.0	1230-1190

Source: Dikaios 1971 (Volume II)

The percentage of Mycenaean wares at Enkomi far outstrips that at Ugarit. Although precise percentages cannot be calculated for Ugarit, as mentioned earlier, a study by Monchambert (1983) of the results of excavations of 1975 and 1976 revealed that Mycenaean and Cypriot wares *together* only amounted to 1% of the total ceramics found in a settlement context (which included a large, élite dwelling at the north west of the tell) at the end of the LBA.

It should be noted that Dikaios' chronology needs revision in light of more recent work. Level IIB, which equates to LC IIC (Dikaios, 1971: 487) is now viewed as being equivalent to approximately 1300 BC to 1200-1190 BC. Level IIIA is, therefore equivalent to the first phase of LC III (beginning in 1200-1190 BC – see Figure 2) and it is interesting that Syro-Palestinian imports fall sharply in this period – the period of Ugarit's destruction.

Inland from Sarepta

The Mycenaean assemblage at Sarepta suggests that it may have acted as an import node for trans-shipment inland to sites like Kamid el-Loz, whose Mycenaean assemblages are also dominated by stirrup jars (the rest being flasks and other sorts of jars mainly) (Koehl, 1985: 144). The gist of this argument, initially put forward by Koehl (*ibid.*) is that the more specialised open forms, such as amphoroid kraters, remain at port, while stirrup jars go inland for contents and he suggests a theoretical route from Sarepta inland in a northerly direction along the Litani river (see Map 9).

A decanting operation, from large shipping containers to small ones, appears not to be happening at Sarepta. Large transport/storage vessels (FS 14-19, 20-26, 34-38, 164, 166 and 167) are not prevalent in the archaeological record of Sarepta. Small shipping containers, such as stirrup jars, that are found inland may have been sent on with their contents to the hinterland. The fact that the majority of these vessels are small suggests that their contents may have been valuable.

In any discussion of the importance of a port, not only must maritime contacts be considered, but also relationships with interior regions, and the trade routes through which they are accessed, usually along natural drainage routes. These trade routes worked both ways and delivered raw materials, manufactured items and agricultural produce to the coast as well as receiving imports (Stager, 2001). The prosperity of the LBA Levantine ports must have derived from their ability to integrate the resources arriving overland with the maritime network and, although the ceramic trade would have represented but a small fraction of this trade, it leaves a highly visible marker of the processes that linked distant suppliers, via the ports, to the interior regions.

The discussion that follows concentrates on the flow of Mycenaean ceramics from the Phoenician coast inland to Kamid el-Loz (in modern Lebanon) and Tell Dan (in modern Israel). Both sites have yielded impressive examples of Mycenaean wares, and lie either along, or within easy reach of, the Litani river trade artery from the Phoenician coast.

Zone L2, which will be referred to as Phoenicia for convenience, was under Egyptian control during the LBA. Like Sarepta, both Kamid el-Loz and Tell Dan were not destroyed at the end of the LBA. Kamid el-Loz appears to have lost prominence at around this time, possibly as a result of the Egyptian administration retreating further south, and its Iron Age remains are a shadow of those of the LBA and suggest a simpler form of social organisation. Tell Dan, similarly, exhibits a simpler way of life during the early part of the Iron Age.

Geographical Setting

Kamid el-Loz lies at the southeastern end of the Biqa Valley, described by Dussaud (1927: 315) as:

"... le plus beau couloir de circulation entre le Nord et le Sud du Levant."

The Biqa Valley is about 100 km long and 25 km wide and, via the Litani and Orontes rivers, is the inland corridor through which goods would have moved from Sarepta and other Phoenician ports. Kamid el-Loz's position remains strategic in modern times, having been the most northerly defensive position of the Israeli army during the Lebanese war. Tell Dan lies a short hike across the hills from the bend of the Litani to the Upper Jordan Valley (see Map 9).

Kamid el-Loz

This seven-hectare tell is one of the largest in the Biqa Valley and was excavated between 1963 and 1981 by a German mission before hostilities halted work. Tablets found at the site in 1969 identified it as Kumidi, a seat of Egyptian administration known from other texts. By 1981, excavation areas totalling 3,800 sq m had penetrated LBA levels (Badre, 1997). Work resumed in 1997 (under the directorship of Marlies Heinz of Freiburg University) and the research goals of the new excavations include investigating the role of Kamid el-Loz within the political economy and settlement hierarchy of the region (and what role the LBA temple and palace found there in the early excavations played in this – if any) and the life ways of the people living at the site (Heinz, 1997).

The analysis of the ceramic finds across the site as a whole has not been published so far and this discussion takes the Temple as an example, for which publications exist (Hachmann, 1966; Hachmann and Myron, 1980; Myron, 1982). This large temple (700 sq m in area) has yielded 29 Mycenaean vessels of diverse types.

Table 12: Kamid el-Loz Temple Compared with Sarepta

Vessel Type	FS	Kamid el-Loz	Sarepta Settlement	Sarepta Tomb
Pithoid/Piriform Jar	44-45	1	2	1
Alabastron	94-95	5	8	
Stirrup Jar, Squat	178-181	2	7	16
Stirrup Jar, Conical	182-183	1		2
Stirrup Jar, LM III Type	SJ	4	53	
Lentoid Flask, 2 Handled Variant	186	2	7	4
Conical Rhyton	199	3	1	
Zoomorphic Rhyton	Hedgehog	1		
Stemmed Cup	254-278	6	1	
One Handled Bowl	283	1		
Deep Bowl	284-285	2	3	
Anthropomorphic Figurine	Psi	1	4	
		29	86	23

Note: FS = Furumark Shape.

Table 12 compares this assemblage with that within settlement of Sarepta and that of the Sarepta tomb, which shows a high correspondence of wares with the settlement at Sarepta. This suggests that their source was the same in both cases (Koehl, 1985: 144). Vessel types are listed by Furumark Shape (Furumark, 1941) and the purpose of showing these data in this way is to see whether the shapes available inland were also present at a port that may have supplied them.

This temple assemblage is unlikely to prove representative of that of the site as a whole, judging by experiences at other sites such as Ugarit, and we must await new data from the ongoing excavations on domestic contexts. Nevertheless some broad points can be made:

1. Over half the vessels are closed forms that would probably have moved inland initially for their contents.

2. FS 186 (Lentoid Flask 2 Handled Variant) appears to be more common at Sarepta than the other coastal Levantine sites. 11 examples have been found there, seven of which were from the settlement. This compares with three at Tell Abu Hawam, only two at Ugarit and none at Ashdod. Interestingly, this shape is also present at Dan (see Tell Dan below). Plate 6 shows an example of this type of vessel from Sarepta.

3. There is good correspondence between the vessel shapes and those available to Sareptans. Only one rare one handled bowl and a hedgehog rhyton do not have parallels there. These do have parallels at Ugarit, but not at any of the other Levantine ports. Given only 900 sq m of excavation in contexts where ordinary people lived and worked at Sarepta, such rare shapes might not be expected to turn up.

The majority of the assemblage, therefore, does not contradict a Sareptan source and, given Kamid el-Loz's geographic location, it may have gained access to the rare forms from the north.

Tell Dan

Tell Dan is situated at one of the sources of the river Jordan at the junction of the ancient north-south and east-west caravan routes. (Biran, 1993). The 50-hectare site has been excavated since 1963, with the current director, Biran, taking over in 1967. The most spectacular LBA finds come from Tomb 387, discovered in 1969, which was so rich in Mycenaean finds that Biran initially referred to it as the "Mycenaean Tomb". 28 Mycenaean vessels were recovered from the tomb (representing 26% of its pottery assemblage), which also contained three Cypriot vessels and 77 local wares.

An outstanding, virtually intact amphoroid krater with chariot scenes was found there that has closest parallels in Cyprus particularly Kourion (Ben-Dov, 2002: 110). This vessel, together with others from the tomb, has been subjected to provenience studies (Gunneweg et al., 1992; Yellin and Maier, 1992) using NAA. Both concluded that the krater was produced in the Mycenae/Berbati region of the Argolid (and, possibly surprisingly, this was also the case for all the other Mycenaean wares tested at Dan). Some plain local wares from the tomb were also tested and, interestingly, these mapped to the Phoenician coast (Gunneweg et al., 1992).

Table 13 compares the Dan tomb assemblage with that of the Sarepta tomb and settlement.

Table 13: Tell Dan Compared with Sarepta

Vessel Type	FS	Dan Tomb	Sarepta Tomb	Sarepta Settlement
Pithoid/Piriform Jar	44-45	5	1	2
Amphoroid Krater	53	1		1
Alabastron	94	6		8
Globular Jug, Small	114		1	
Stirrup Jar, Globular	169-177	4	3	4
Stirrup Jar, Squat	178-181	3	16	7
Stirrup Jar, Conical	182-183		2	
Lentoid Flask, 2 Handled Variant	186	1	4	7
Globular Flask, Vertical Type	189	3		1
Globular Flask, Horizontal Type	190	1		1
Shallow Cup	220	1	1	3
Stemmed Cup	254-278	1		1
Shallow Angular Bowl	295-296	2	3	5
		28	31	40

Note: FS = Furumark Shape.

The tomb at Sarepta, which had been robbed in recent times prior to excavation (Baramki, 1958), contained 31 Mycenaean vessels – 70% of the vessels recovered.

1. Every single shape at Dan has a parallel at Sarepta. 82% of the shapes are closed, compared with 87% in the Sarepta tomb.

2. FS 186 (characteristic of Sarepta and Kamid el-Loz) is also represented in the Dan tomb.

3. The two tombs also have close parallels in their Cypriot wares. Ben-Dov (2002) chooses more geographically distant parallels from Enkomi for the Cypriot wares in the Dan tomb and does not note the similarities with the Sarepta tomb. Each has a Base-Ring II bowl with an upturned wishbone handle (Baramki, 1958: no. 44 – mislabelled 45 in the illustration; Ben-Dov, 2002: Fig 2.63). Each had White-Slip II bowls (2 at Sarepta; 1 at Dan) and both had three Cypriot vessels overall.

At Tell Dan also, therefore, the evidence inland does not contradict the possibility that Mycenaean wares got there from Sarepta. Congruence in Mycenaean shapes and similarities in Cypriot assemblages corroborate Koehl's (1985: 144) concept of Sarepta acting as a distribution centre for inland sites. The added evidence from NAA analysis of Phoenician coastal provenience of local wares at Tell Dan also adds support to the

idea that the Litani river trade route was active in supplying this site with goods from the Phoenician coast.

Better closure on this subject requires more research and excavation, and the lack of provenience studies of the Sarepta material needs to be addressed. Renewed excavations at Kamid el-Loz and, indeed, Sidon should provide valuable new material in domestic contexts in time.

Discussion

The contextualised results of the analysis of data from domestic contexts will now be examined through the lens of the world-systems framework suggested by Chase-Dunn and Hall (and reviewed in detail in Chapter 2). This will facilitate comparisons between the Zones of the Levant and Cyprus within the LBA Eastern Mediterranean world-system. Specifically, the following issues will be considered:

1. The intensity of LBA trade contact that resulted in Mycenaean and Cypriot wares arriving in the Levant, and how this varies through time.

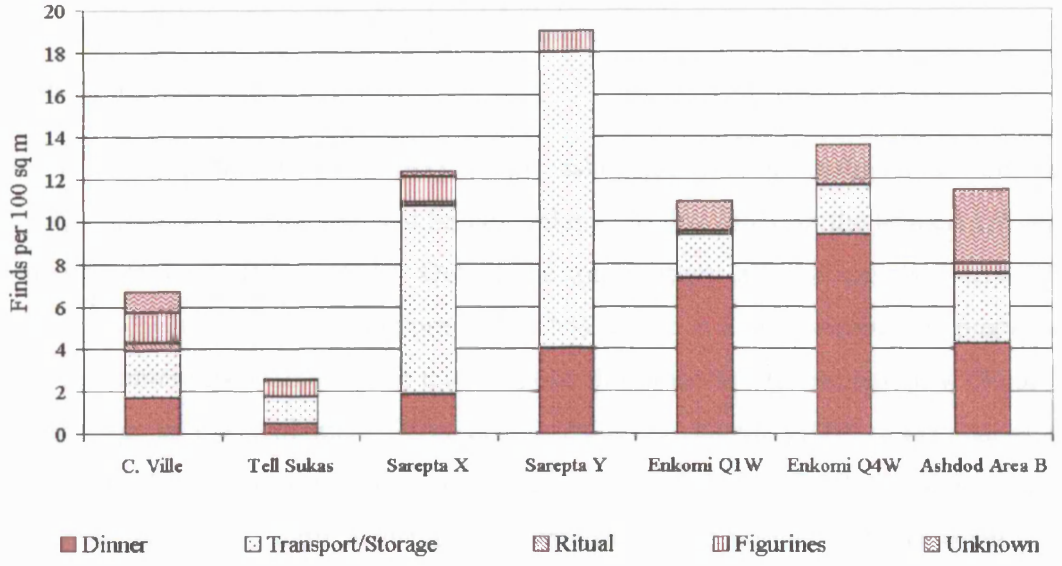
2. Whether that contact was direct from the point of manufacture or whether the vessels arrived at their site of deposition through the activities of an intermediary.

3. Whether the trade networks through which ceramics arrived in the Levant were similar along the length of the Syro-Palestinian littoral or whether this varies between the defined sub-areas.

Intensity of Contact and its Evolution

This research has yielded comparative data on the concentration of Mycenaean wares in domestic quarters where ordinary people lived in port cities along the length of the Syro-Palestinian Coast and in Cyprus. These data, which have been normalised for the differing areas excavated at the individual sites, are shown in Figure 12 (which also shows the situation at Tell Sukas, a subsidiary coastal site within the kingdom of Ugarit). Tell Abu Hawam is missing from this chart for the reasons outlined earlier in this chapter. The concentration data is broken down into the functional classes to enable ease of comparison.

Figure 12: Comparative Concentrations of Myc. Wares in Domestic Contexts



The inhabitants of the domestic quarter at Sarepta seem to have had a very high appetite for Mycenaean wares. The vast majority of Sarepta's assemblage comprised closed transport/storage vessels, which presumably were imported initially for their contents and could have passed to the interior from this port. The overall concentration of Mycenaean ceramics at Sarepta exceeds not only those of the remainder of the Levant but also, surprisingly, comparable domestic contexts at Enkomi.

The quantities of Mycenaean dinnerware per unit area of excavation are similar at both Sarepta and Centre de la ville at Ugarit, with that at Tell Sukas being slightly lower. In contrast, Mycenaean dinnerware is three to four times more common at Enkomi. This suggests that ordinary inhabitants had a greater opportunity to obtain these at a port that had extensive commerce with the Aegean and which may have served as one of the principal Cypriot gateways for Aegean wares to the Levant, travelling on ships carrying higher value Cypriot cargoes such as raw copper or manufactured bronze items.

Dinnerware is also twice as abundant in the southern Levant as in the north. This is confirmed by the Ashdod evidence and corroborated by the vast number of Mycenaean drinking vessels and other dinnerware found at Tell Abu Hawam. The extensive commerce of Cyprus with Zones L3 and L4, judging by the greater number of Cypriot wares found there than Mycenaean wares, may suggest that the Cypriot taste for Mycenaean dinner wares in evidence at Enkomi may have had an influence in the

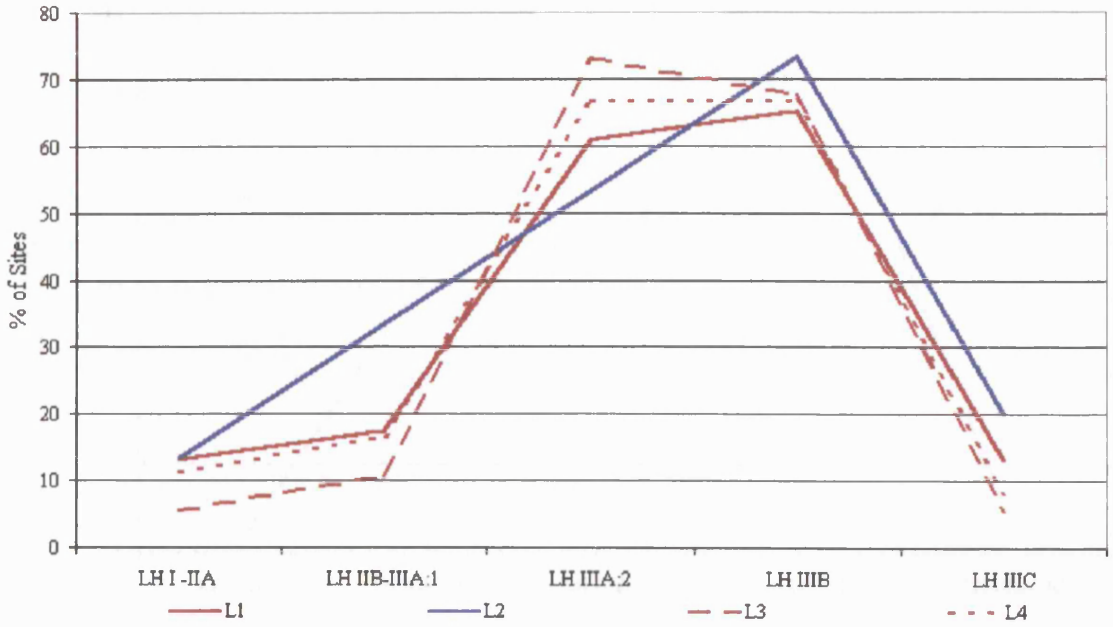
southern Levant at ports of call en-route from Cyprus to Egypt. It is also interesting that roughly the same number per unit area of transport/storage vessels were found in domestic contexts at Ugarit, Enkomi and Ashdod, while these were vastly less than was found at Sarepta.

Within Zone L2, Koehl (1985: 143) has also asked questions about the relative amounts of Mycenaean to Cypriot wares at Sarepta relative to that found in the limited 150 sq m sounding at Tyre (Bikai, 1978). Out of the total pottery assemblage recovered from Bikai's excavation, 4% were imports (*ibid.*: 53), which is a high number in comparison with the limited data from Ugarit that suggests that imports represented only 1% of the assemblage in the settlement (Yon et al., 2000: 3). Koehl (1985: 143) makes the suggestion that the network of trade may have been different for the two cities, or at least that Sarepta was more active in trade with merchants purveying Mycenaean wares than was Tyre. Unfortunately, not all the Tyrian Mycenaean finds have been illustrated and, therefore, it is not possible to exclude LH IIIC wares from this comparison.

The 800 sq m Sarepta Area II, X produced 75 Cypriot finds (Base-Ring II, Monochrome and White Slip II) relative to 108 Mycenaean wares (including LH IIIC), whereas Tyre has more than 400 Cypriot to 40 Mycenaean finds. On a vessel count, therefore, Tyre has almost double the concentration of Mycenaean wares of Area II, X at Sarepta (27 finds/100 sq m compared with 14 finds/100 sq m). At the same time, Tyre has produced a far greater suite of Cypriot wares. This pattern suggests that Tyre might have had greater dealings with Cyprus to obtain Cypriot wares than did Sarepta as well as possibly playing a similar role to that postulated by Koehl for Sarepta as an import node for Mycenaean wares.

Turning to developments over time, although it is problematic to equate the Mycenaean style classes with absolute chronology, the relative chronologies of the different styles do provide a framework for assessing the timing of the appearance of these styles in the Levant and measuring how this varies between the Zones. Figure 13 shows the percentage of sites in Zones L1-L4 with at least one Mycenaean find (LH I – LH IIIC).

Figure 13: Percentage of Sites within Levantine Zones having Mycenaean Styles

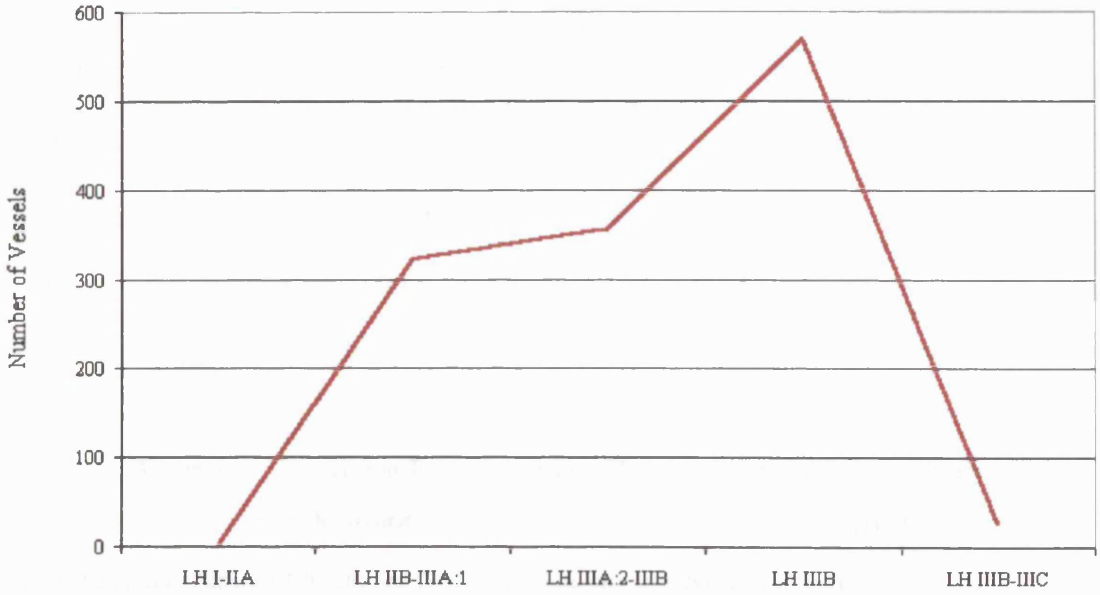


Source: Calculated from data in Van Wijngaarden, 2002: Catalogue I.

Again, Zone L2 looks different, with one third of sites yielding LH IIB-LH IIIA:1 wares, which is roughly twice the percentage in other zones. Sarepta's zone appears to have greater early contact with suppliers of Aegean wares. Possibly because Zone L2 appears not to have suffered widespread destruction at the end of the LBA, it also has a greater percentage of sites with LH IIIC finds.

Figure 14 shows that the picture was similar at Enkomi to Zone L2. Mycenaean wares make their first appearance in LH 1-IIA (only 4 vessels) and then the quantity rises rapidly in LH IIB-IIIA:1 and peaks in LH IIIB. Based on this evidence, it seems probable that Cyprus and Phoenicia/Zone L2 received Mycenaean wares in greater quantities earlier than other parts of the Levant.

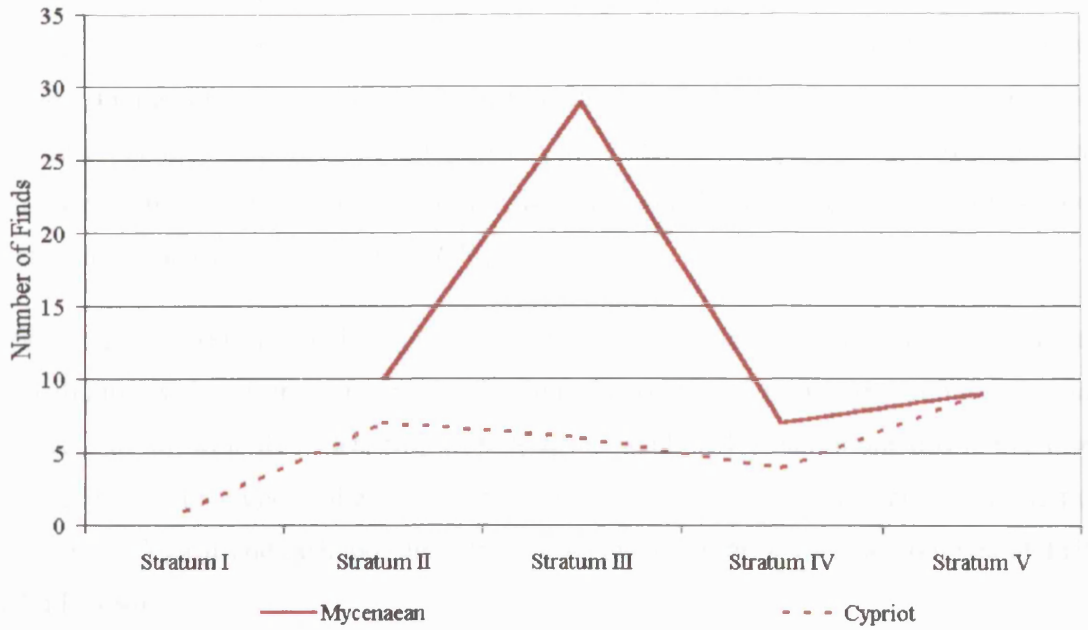
Figure 14: Enkomi Overall Distribution of Mycenaean Styles



Source: Van Wijngaarden, 2002: Table 10.3. All contexts included.

Figure 15 examines the "diachronic" changes in Mycenaean and Cypriot wares across the LBA strata in Sarepta Area II, X in more detail, detailing the different evolution of consumption of Mycenaean and Cypriot wares compared with elsewhere in the Levant.

Figure 15: Sarepta Area II, X Diachronic Changes



Source: Sarepta II Tables 1A/B; 2B. See Table 9 for data and absolute chronology.

Mycenaean pottery makes its first appearance in Stratum II and rises in popularity until Stratum III. There is a marked downturn in Stratum IV, which coincides with the problems that were enveloping the region at the end of the LBA, before Mycenaean IIIC wares lead to a slight rebound in Stratum V. Cypriot imports are present in Stratum I, but decline once Mycenaean wares appear. They only recover to previous levels at in Stratum V in the early Iron Age (after sites elsewhere in the Levant had experienced destruction).

Gittlen (1981) attributes the decline in Cypriot wares in the archaeological record regionally that corresponds to that seen in Stratum III at Sarepta to the attempts of Seti I and Ramesses II to re-establish control in the Levant. Although this idea of regional instability could account for the reduction in Cypriot wares, it does not account for the large rise in Mycenaean wares at Sarepta, however.

Direct or Indirect Mechanisms

The excavators of Ugarit (Yon et al., 2000: 18) have suggested that the sheer quantity of material from the Argolid found there suggests that it was a:

"... *destination de choix pour le commerce égéen.*"

However, the existence of a *direct* trading relationship between the Aegean and Ugarit is not borne out in the rich textual records of Ugarit. As mentioned in Chapter 2, these attest commercial relationships with many areas, but there is not a single record of an Aegean merchant trading in Ugarit, which Singer does not see as a simple oversight. In contrast, contact with Cyprus, 160 km away, is well documented, particularly at the very end of the LBA (Singer 1999: 676).

Hankey (1971, 1967) raised the possibility of Cypriot middlemen being instrumental in distributing Mycenaean wares to the Levant. Apart from Sarepta, the numerical data broadly fit in with this idea and with Renfrew's (1975) ideas about down the line exchange. More Cypriot than Mycenaean wares were present in ordinary domestic quarters at Ugarit and Ashdod, and this is also the situation across all contexts at Tell Abu Hawam.

At Ugarit, there was a significantly lower concentration of Mycenaean wares than at Enkomi (see Figure 12) in a comparable domestic context. In addition, Hirschfeld's (2000b) work on pot marks on Mycenaean vessels from Ugarit suggests that some of these might be linked to Cypro-Minoan script and have been some kind of incised mark understood by distributors or shippers on Cyprus. These particular kinds of marks are limited to large closed vessels (large stirrup jars and piriform jars). Unfortunately, only one such vessel has been found with a handle surviving at Sarepta – and that is not marked. No inferences whatsoever can be drawn from this absence of evidence, obviously. The limited provenience work carried out at Ugarit suggests that Mycenaean wares may have come from a variety of sources (Hirschfeld, 2000a: 70-71). In the absence of evidence of direct links with the Aegean in texts, a variety of sources for Mycenaean wares could also support the aggregation of these wares on Cyprus before trans-shipment.

Tell Abu Hawam lies half way between Cyprus and Egypt and its foreign ceramic imports are principally Cypriot, even though it has a high absolute number of

Mycenaean finds. It has also produced Mycenaean wares marked with Cypro-Minoan script (Hirschfeld, 2004). This could argue in favour of an intermediary role for Cypriot merchants in supplying Mycenaean wares there, as well as at Ashdod, possibly as part of a longer voyage, with a diverse cargo, to Egypt. The predominance of dinnerware at both sites resembles that in domestic contexts at Enkomi, and is completely different from the dominance of transport/storage vessels, only 70 km north of Tell Abu Hawam at Sarepta (see Figure 12).

Similar or Different Trading Relationships

The higher concentration of Mycenaean finds at Sarepta, together with the fall-off in Cypriot wares (once Mycenaean wares have been introduced), suggests that a different strategy was being employed there to obtain imported wares. It is intriguing that the site that escapes destruction (perpetrated or at least catalysed by invaders that are linked with an Aegean cultural background elsewhere in the Levant) is the Levantine site that has the greatest density of Mycenaean pottery finds when comparable contexts are examined. The similarity of its assemblage to those of Kamid el-Loz and Tell Dan (inland along major trade routes) also suggests that Sarepta could be acting as an import node for transport/storage vessels (and their contents), and Mycenaean wares generally, for supply to inland.

The concentration of Mycenaean wares in the two areas at Sarepta is (in terms of finds per 100 sq m) similar to those at Enkomi (and, if anything, slightly higher). This could argue in favour of a more direct mechanism for Mycenaean wares to arrive at Sarepta than is the case at Ugarit, where they are far fewer in number per unit area. Referring to the phrase used by Yon, among the Levantine sites considered here, in the direct sense of the phrase, perhaps Sarepta was a "*destination de choix pour le commerce égéen*".

Post-script from Tell Tweini

The original purpose of developing a methodology for comparing quantities of Mycenaean and Cypriot ceramic imports from comparable contexts at different sites in the Levant was to identify intra-regional variation. Having detected such variation, suggestive of differences in the intensity of the trade in ceramics between the various participants of the Eastern Mediterranean trading network during the LBA, the

predictive potential of this methodology with respect to the likely nature of imported ceramic assemblages will now be considered.

The current excavations at Tell Tweini, near Jableh in Syria, which have taken place during the period of writing this thesis, provide the opportunity to undertake a *gedanken experiment* – namely to make a prediction about the nature of the imported ceramic assemblage from this site and to measure this against preliminary excavation results. Tell Tweini lies 1.7 km inland in a location about 35 km south of Ugarit and 5 km north of Tell Sukas. The current archaeological project is under the joint direction of the Director of Latakia Museum and Karel Van Lerberghe of the Katholieke Universiteit, Leuven. I am deeply grateful to Professor Van Lerberghe, Dr Joachim Bretschneider and Dr Klaas Vansteenhuyse for communications over the past four years as the excavations have progressed.

One of the principal objectives of these excavations is to investigate the transition between the LBA and Iron Age (Bretschneider et al., 2000). Based on the tell's location (close to Tell Sukas within the southern reaches of the kingdom of Ugarit) and the characteristics of the imported ceramic assemblage in Zone L1 presented earlier in this chapter it would be reasonable to predict that a domestic context within this site should have the following characteristics:

1. More Cypriot than Mycenaean imports, and;

2. A quantity of Mycenaean wares per 100 sq m of excavation comparable to that at Tell Sukas, but lower than at Ugarit (the principal international port in this part of the Levant).

The most recent season of excavation (2004) penetrated LBA levels for the first time. I am very grateful to Dr Vansteenhuyse for his permission to discuss unpublished *preliminary* results concerning imported LBA ceramics from Tell Tweini in this thesis (K. Vansteenhuyse, personal communication, September 2004). Mineralogical and chemical analyses of the finds are planned and these materials will be published after such work has been completed.

The LBA ceramic imports recovered at Tell Tweini come from a 350 sq m excavation within Field A (which is a 1200 sq m exposure at the centre of the tell). The excavators

believe this area was mainly an open court, with only a small part of an interior room. As Dr Vansteenhuyse has pointed out to me, this may have a bearing on the type of vessels found there. The preliminary results were as follow:

1. The excavations encountered more Cypriot wares than Mycenaean ones (full quantification of Cypriot wares is awaited), which is in-line with the above prediction.

2. With regard to Mycenaean wares, the concentration is calculated to be approximately 2 vessels per 100 sq m (see below).

Vansteenhuyse describes the situation as follows (e-mail dated 31 September, 2004):

"Using your criteria, we have a minimum of 5-6 individual vessels within this area of 350 m². At least one of them is an amphoroid krater in Pictorial Style... The others seem to belong to pyxides but those fragments are tiny and it is hard to tell the minimum number of vessels. If this number of vessels can be confirmed by future study and excavations, the ratio at Tell Tweini is 2 'Mycenaean' vessels per unit of 100 m² which is considerably less than at Ugarit."

Although this is, indeed considerably less than Ugarit, it is comparable with the results for Tell Sukas (see Figure 12), where the number of finds per 100 sq m is between 2 and 3. It is also interesting that a pictorial amphoroid krater has been found, a form common at Ugarit and in Cyprus.

This, therefore, is another data point on the nature of the imported ceramic repertoire in Zone L1. I hope to be able to refine further the picture of regional variation presented in this chapter as new excavations yield data. Another site in Zone L1 that may come into play in the next few years is Alalakh. As will be discussed in Chapter 4, the resumption of work at Alalakh is likely to prove important in understanding the bronze industry and metals trade in this region. It is also likely to produce insights on imported ceramics. Koehl (2004) recently presented unpublished Mycenaean finds from Woolley's finds depot at the site. This study, carried out in 2002, more than doubles the number of published Mycenaean vessels (from 40 to 84). Unfortunately, due to the relatively poor stratigraphic understanding of these early excavations, Koehl's comments were necessarily restricted to shapes and styles. His paper did not address Cypriot ceramics, save to say that these outnumbered Mycenaean ones. The next few years may also see the excavations at Sidon, under the direction of Claude Doumet-Serhal, yielding

information from LBA settlement contexts that will enhance understanding of the trading contacts of this major port.

CHAPTER 4: METALS AND EASTERN MEDITERRANEAN TRADE

If the presence of Cypriot and Mycenaean ceramics in the Levant bears witness to extensive LBA maritime trade in the Eastern Mediterranean, the abundance of tin bronze objects in its archaeological record testifies to the extensive overland trade routes along which tin reached the furnaces of metalworkers in the Levant and Cyprus from beyond the Euphrates.

This chapter reviews the evidence for trade in copper and tin, as well as the nature of the assemblage of bronze objects found in the LBA archaeological record of the four Levantine zones and contemporaneous evidence from Cyprus. The purpose of this exercise is to determine the relative importance of each of these geographical areas in the supply and demand of metals in a wider Eastern Mediterranean context as well as the extent of the metal processing and manufacturing activities each was engaged in within urban settings. As outlined in Chapter 2 in the discussion of the limitations of past research in this field, this study sets out to synthesise *all* the available classes of data, be they textual or archaeological and, when and wherever they exist, scientific data are also included.

Philip et al. (2003) have remarked that the results of scientific studies on metal objects are likely to pay greatest dividends when compositional analyses are considered alongside production, distribution and consumption patterns and that these results are then further analysed in the context of material culture patterns of other artefact classes. This chapter aims to follow the first part of this stratagy and, using the same reasoning as in Chapter 3 with respect to imported pottery, an attempt is made to assess the access of ordinary inhabitants to manufactured bronze objects. A consideration of the metal objects alongside the ceramic evidence follows in Chapter 6.

This analysis will necessarily stop short of making extensive quantitative comparisons, as metal objects are far more likely to have been removed in times of crisis than pottery, as well as being recycled constantly. Another issue with this subset of the archaeological record is that so many of the bronze artefacts recovered have come from either funerary contexts or from hoards, rendering quantitative analysis of ordinary domestic contexts within settlements presented for imported ceramics in Chapter 3 impossible. Nor will it include extensive descriptions of the typology of bronze finds, as

the principal purpose of this exercise is to investigate the networks and supply chains through which the raw materials for making bronze reached the workshops of the Levant and how extensive the evidence for such bronzeworking is in the different zones. Evidence from Cyprus will also be integrated into the discussion.

As will become apparent, major lacunae exist in the data sets relating to the LBA Eastern Mediterranean bronze industry. It is fortunate that two LBA shipwrecks have been found off the coast of Turkey that provide unique insights into the distribution mechanisms for raw metal and the maritime dimension of this trade, namely Uluburun (c. 1300 BC) and Cape Gelidonya (c. 1200 BC). For land transportation, however, no donkey caravan, nor a complete bill of lading for one, has been found (Monroe, 2000: 78). Analysis of the textual evidence in conjunction with that from the archaeological record allows a picture to be built, albeit a fragmentary one, of the pivotal position of the tin trade in the prosperity of Ugarit. Ugarit's destruction early in the twelfth century BC surely meant that centuries-old chains of supply between the Euphrates valley and the Mediterranean were broken.

The locus of international trade initially appears to have moved south – to the undamaged and thriving Phoenician ports and became more focused on the maritime sphere (as is discussed in Chapters 5 and 6). We currently have relatively little knowledge of the Amuq Plain and the nearby coast north of Ugarit. Like Ugarit, Alalakh is destroyed at the close of the LBA and not resettled in the Iron Age. Later in the Iron Age (8th century BC), Al Mina at the mouth of the Orontes becomes a major port, with evidence of a substantial trade with the Greek world (Akkermans and Schwartz, 2003: 388) but it does not seem to have been active in the period immediately following the sacking of Ugarit and Alalakh.

The emergent pattern of Iron Age trading relationships is examined in greater detail in Chapter 5. Particular emphasis will then be given to archaeological evidence from the period immediately after the close of the LBA that sheds light on how the Phoenicians may have capitalised on the opportunities that arose from the power vacuum (which followed the withdrawal of the influence of the Great Powers of Egypt and Hatti from the northern Levant and before the neo-Assyrians began to assert their demands for tribute). The current chapter sets out to describe the state of play in the bronze

industries regionally in the closing years of the LBA, before the major readjustment this trade underwent after the fall of Ugarit, Emar and, of course, Hattusa.

An oft-made remark of Sheikh Ahmed Zaki Yamani, Saudi Arabia's oil minister between 1962 and 1986, in reference to the current oil age, and the role of oil exporters within it, has a certain resonance with the events that took place at the end of the Bronze Age:

"The Stone Age came to an end not for a lack of stones and the oil age will end, but not for a lack of oil."

The evidence presented by Pickles (1988) on objects from Kouklia (Palaepaphos) in western Cyprus and that from a wider range of sites in the Levant and Cyprus by Pickles and Peltenburg (1998) demonstrates that the Bronze Age did not end because they ran out of bronze, or either of its principal metal components. Moreover, bronze continued to be used in the Iron Age, and the point at which iron becomes the predominant metal in daily life varies within the Eastern Mediterranean region. The technological innovation that led to the widespread use of iron which, unlike tin, is widely available in nature, must have had a bearing on the geographic orientation of Iron Age trading relationships in the Levant. Eventually, no longer needing to focus on obtaining tin in large quantities from beyond the Euphrates, the Iron Age coastal cities could either concentrate their trading endeavours more fully on the Mediterranean (as was the case in Phoenicia) or become less international in outlook, for a time (as seems to be suggested by the material culture of Philistia in the Southern Levant). As discussed below, the reactivation of the copper mines at Feinan in southern Jordan (which had been a major producer during the EBA) in the Iron Age may represent a reversion to using more local copper resources, compared with the wide distribution networks that existed at the close of the LBA in the Eastern Mediterranean (Philip et al., 2003; Levy et al., 2004). Recycling of bronze already in circulation may have provided the necessary tin, although in the early part of the Iron Age, it is possible that stocks of raw tin were still being utilised.

Data Set and Definitions

As was the case in Chapter 3, the published archaeological record is a key data set for this work. Unpublished reports on certain important sites are also included, for example

where papers have been presented at conferences recounting the results of very recent excavations. In addition to this, textual and scientific data are integrated into the analysis, the former being a more substantive body of knowledge than the latter at present.

Within the archaeological data, clear distinctions will be made between the different stages of bronze production from smelting ores, refining the products of primary smelting of copper and tin, through bronze production by alloying the two metals in specific ratios to working the bronze (smithing) to produce weapons, tools and items used in rituals or for adornment. Each of these steps leaves a different signature in the archaeological record but all too often, excavation reports do not make sufficient distinctions between these different steps (Stech, 1982).

The survey of the Levantine and Cypriot sites contained in this chapter shows that very little, if any, primary smelting of ore took place inside the urban centres – not even at sites such as Kition and Enkomi in Cyprus. Unlike the case of prehistoric Spain, where Díaz-Andreu and Montero (2000) demonstrate that ores have been transported to distant production centres (in the case of Madrid, they calculate that ores had travelled 40-60 km to their point of retrieval in the archaeological record), this does not appear to be the case either in Cyprus or the Levant. One of the greatest problems in identifying an urban site as one in which raw metal is produced from ores is the correct identification of slags in the recovered archaeological record. To avoid confusion, clear definitions of processes and their products are required:

Primary smelting is the process of extracting a metal from its ores by heating and reduction, or the initial pyrotechnological treatment of the ore (Stech, 1982). **Slag** is a material mostly made up of metal silicates and is both a necessary component of smelting and a by-product of it. However, slags can be, and are, produced by other metallurgical processes, such as the **refining** of the products of primary smelting of copper (copper prills with some slag) and from **alloying** (the mixing of metals together to produce a material with desired properties), albeit on a much smaller scale.

Stech (1982) cautions that, with reference to excavation publications of major urban sites in Cyprus such as Enkomi and Kition, the presence of slags originally tended to be interpreted as evidence of smelting. This analysis, therefore, examines the raw

archaeological data in each case, rather than to accept automatically the interpretation of the excavator when smelting activities are identified.

In addition to slag, typical correlates of smelting would be furnaces, tuyères (tubes for introducing air into the furnace at its base – usually made of ceramic material), ceramic crucibles, smelted metal and ingot moulds. Copper smelting during this part of the Bronze Age was carried out in furnaces, rather than in crucibles (Rehren, 2003). Therefore, presence of a furnace, rather than just crucibles, is a necessary correlate of smelting. Ingot moulds are particularly rare with only a single example known for oxhide ingots, namely that found in the North Palace of Ras Ibn Hani in 1982. Given this, it is not impossible that molten metal was poured into sand into which a suitable depression had been made, rather than stone moulds, in order to produce ingots (Bounni et al., 1998: 44).

Framework of Analysis

Copper, the principal component of bronze, played a vital role in LBA societies. Bronze was both an emblem of prosperity and was a strategic necessity with respect to the manufacture of arms that underpinned military power. By the LBA, it was also necessary for a large range of tools used to manufacture other items in wood and luxury materials, such as semiprecious stones and ivory.

Large-scale long-distance trade in copper in the Eastern Mediterranean region was probably a phenomenon that grew in importance during the LBA (Muhly et al., 1988) compared with previous periods. This metal was widely traded overland and by sea, often in the form of oxhide ingots. These appear first in Crete (in 16th and 15th centuries BC contexts), then later in Cyprus and Sardinia (mainly from the 13th and early 12th centuries BC) as well as being the main cargo of the Uluburun and Cape Gelidonya shipwrecks close to the Lycian coast (Bounni et al., 1998: 48). As discussed later in this chapter, none of the pre-thirteenth century BC ingots recovered in the Eastern Mediterranean region have mapped to known Cypriot ore bodies.

Reddish ingots appear in the tomb of Ramesses III in the Valley of the Kings, which has a number of side chambers representing royal storehouses. As may be seen from Plate 7, a scene on the south wall of side chamber CG depicts copper oxhide ingots (Weeks et

al., 2004). The same chamber also has depictions of Mycenaean stirrup jars, other containers and vessels as well as exotic woods and beads.

Oxhide ingots are also depicted in the tombs of noblemen in Egypt where they appear in tribute-bearing scenes involving Aegeans and Syrians (Wachsmann, 1987: 50-53). As Wachsmann points out, there is only one scene in which Aegeans are bringing oxhide ingots to Egypt – that in the Theban tomb of Rekmire (no. 100), a vizier under Tuthmosis III and his successor Amenhotep II (*ibid.*: 35). Bass (1967: 63) quotes the inscription that accompanies this depiction in this 15th century BC tomb:

"... the chiefs from Keftiuland (and) the islands which are within the Great Sea... ".

Syrians (the chiefs of *Retenu*) also bear oxhide ingots in Rekmire's tomb and it is this ethnic group that is normally depicted doing so in the tombs at Thebes and Amarna (e.g. the tombs of Useramun, Puimre, Penhet, Nebamun and Huy at Thebes and Meryra II and Huya at Amarna). A scene from Rekmire's tomb is shown in Plate 8. The majority of these depictions are of reddish ingots (probably copper) but among the ingots in Rekmire's tomb are also four whitish ones, which have variously been suggested to be silver, lead or tin (Bass, 1967: 64). The slightly earlier tomb of Useramun (No 131) at Thebes (which dates to Hatshepsut and/or early in the reign of Tuthmosis III – see Figure 1) also has Syrians bearing white oxhide ingots.

Sources of Copper and Tin

Obtaining sufficient copper to supply bronze manufacturing workshops appears not to have been a problem in the Levant during the LBA. Orogenic belts of the right type within or close to the northern Levant include Cyprus, the Baer-Bassit Massif in North Syria and the Taurus Mountains (the Ergani Maden mining district). Further afield, but linked to the Eastern Mediterranean by long established trade routes, both the Zagros Mountains of Iran and Oman contain ore bodies that had been exploited since the Chalcolithic of similar geology and age to those of Cyprus, Turkey and North Syria (Chanut, 2000: 245). Meanwhile, copper sources of different geological character in Eastern Egypt, (Gebiet, Umm Samiuki and Sinai), Timna in southern Israel and Feinan in southern Jordan had also been mined since the fourth millennium BC. Thus, all four Levantine zones either contained copper resources or were within relatively easy reach of this metal.

As discussed in Chapter 2, obtaining tin presented a different challenge altogether. Despite the paucity of ore bodies, and the long distances involved, LBA merchants were more than equal to the task of obtaining supplies of tin. This statement is based on the fact that optimal quantities of tin were being alloyed to form bronze in the 13th and early 12th centuries BC and that utilitarian items (tools and weapons) were also being made from tin bronze (in addition to articles of adornment and ritual items). As tin is so rare in nature, it seems reasonable to suggest that all four zones of the Levant received it from the same ultimate source or group of sources. Consequently, this question will not be rehearsed further here, except when there is reason to propose that it had been on-shipped from one Levantine centre to another. As will be seen, in addition to copper and tin, bronze itself was traded between Levantine cities.

Methodology

Table 2 in Chapter 1 lists the Levantine sites that are discussed in this chapter and their criteria for inclusion. These sites are located on Map 10. The textual, scientific and archaeological evidence is reviewed to assess their degree of engagement in the copper, tin and manufactured bronze trade, as well as the involvement inhabitants may have had in manufacturing bronze items and their access to these items. As discussed in Chapter 1, as many sites as possible in each zone have been included in this discussion, with the criteria for inclusion being the existence of relevant texts, archaeological contexts with evidence of bronze working (bronze making, manufacturing bronze objects) or scientific provenience studies on metal objects or ingots.

Iron smelting is not one of the three criteria used to select sites for inclusion in this study because, despite a growing quantity of iron artefacts in contexts that date to the LBA/Iron Age transition, direct archaeological evidence of iron smelting in the Levant is very thin on the ground (Pigott, 2003). Ongoing excavations by Xander Veldhuijzen at Tell Hammeh in Jordan (part of the Deir 'Alla Regional Project run jointly by Yarmouk University and Leiden University) appear to have discovered extensive iron smelting and smithing activities in strata dating to the 8th century BC (Veldhuijzen and Van der Steen, 2000). These may be the earliest such facilities found so far in the Levant (in Zone L3), although evidence for smithing is now beginning to appear at Tel Beth Shemesh in Israel and at Deir 'Alla itself (A. Veldhuijzen, personal communication, August 2004).

Reference does need to be made to the case of Tel Yin'am in the Lower Galilee region Israel (Zone L3), however. The excavators claimed that they had found evidence of very early iron smelting, dating to the 13th century BC (e.g. Liebowitz, 1981). This claim was questioned at the time by archaeometallurgists (e.g. Rothenburg, 1983), but the excavators have persisted with their initial interpretation of a facility that contained domed furnaces and 'slag', despite a growing body of scientific evidence to the contrary. Most recently, Pigott (2003) has put forward an explanation that better fits the scientific facts, namely that this was a facility for heating iron-rich ochres that were locally available to produce coloured pigments for decorative use. Tel Yin'am will therefore not be discussed further here, even though it holds a place in the literature as an important LBA metalworking centre. A last word on the matter of early iron smelting relates to claims made in the excavation report on the metal workshops of Kamid el-Loz about early iron smelting (Frisch and Thiele, 1985: 160). There is little evidence to support this claim in this publication and, consequently, it will not be discussed further here.

In addition to these Levantine sites, the evidence from the principal urban sites of Cyprus is examined, as well as that from the important LBA shipwrecks discovered at Uluburun and Cape Gelidonya

Scientific Methods

Metallographic examination, involving microscopic examination of samples from metal artefacts, can be very informative with respect to the processes of manufacture. For example, whether an object has been produced from native copper or whether cold hammering or annealing (heating) was part of the production process. The main interest of this thesis is, however, trade in copper and tin and consequently I will concentrate on scientific studies that address provenience, rather than production methods, other than when attempting to identify whether evidence for primary smelting exists on a particular site.

Archaeologists have used many methods in the quest to characterise the sources of the component metals in bronze artefacts. Many of these rely on elemental analysis (measuring the percentages of various trace elements in the alloy making up the artefact). The weakness of these methods is that trace elements may not have been diagnostic of the original ore body from which the principal component metal (e.g.

copper) came and may have been introduced in subsequent artefact production processes. Unfortunately, therefore, metallographic and chemical analyses alone do not allow ore sources to be identified with precision (Stos-Gale et al., 1998).

In terms of determining the source of ores that provided the metal for the manufacture of items being tested, lead isotope analysis has emerged as the best tool currently available, certainly in the case of copper based artefacts. This relies on the fact that some elements have more than one form (or isotope) in nature and that the ratios of the different isotopes are not changed by the process of smelting the copper from the ore or any other subsequent chemical or physical process (Stos-Gale and Gale, 1994: 99). Copper itself has two such isotopes, but differences in the ratio between these two isopes in different ore bodies are too small to be useful in distinguishing between these (*ibid.*). Fortunately, different copper, lead and silver mines and ore bodies contain amounts of lead that can be used analytically in attempts to map the provenience of copper artefacts.

Lead has four isotopes whose atomic structures contain the same number of protons in its nucleus (the same atomic number) and the same number of electrons orbiting the nucleus, but different numbers of neutrons in the nucleus (which gives these isotopes different atomic weights – the superscripts of the symbols that follow). ^{204} Pb is the natural isotope of lead on Earth, while ^{206} Pb, ^{207} Pb and ^{208} Pb are the products of radioactive decay of uranium (U) and thorium (Th) (Stos-Gale and Gale, 1994: 99). The lead isotope ratios of ore bodies are therefore a measure of their age (as it is a measure of the amount of the ^{206} Pb, ^{207} Pb and ^{208} Pb formed by decay of U and Th since geological time began). Thermal ionisation mass spectrometry is used to measure the lead isotope components of samples – a technology that relies on atoms of higher atomic weight being deflected less than those of lower atomic weights within a magnetic field (*ibid.*: 100). Three ratios of the lead isotopes are generated from this process that are then usually plotted against each other on two different two-dimensional graphs.

In order for this method to be effective, a large number of ores from ancient mines need to be analysed and cross-referenced to the signatures obtained from the assay of bronze objects. The Isotrace Laboratory at Oxford, under Noel Gale, attempted to do this, but nevertheless, the origin of oxhide ingots found in 16th century BC contexts in Hagia

Triadha in Crete is still unknown: all that can be said is that they do not map to any known Cypriot source of copper, nor do they map to any ore body that so far has been analysed by this method. Criticism of these methods for sourcing oxhide ingots came from Budd et al. (1995) arising from concerns that ingots might have been made from copper from several sources. These issues have been largely addressed by Gale and Stos-Gale (Gale, 1997; Stos-Gale et al., 1997) and a further recent discussion of the issues surrounding the application of this method in archaeology as relates to the provenience of copper oxhide ingots is included in Gale (2003). For the study of LBA trade in copper, especially that concerning Cyprus, lead isotope analysis remains the best method available, especially when combined with metallographic and elemental analysis (Pulak 2000: 147).

Zone L1 – Coastal and Inland Syria

Ugarit and Ras Ibn Hani

Mirroring the state of knowledge of politics and economics at the end of the LBA generally, we know most about the metals trade of Ugarit and its neighbour Ras Ibn Hani. Nevertheless, clear-cut textual evidence of the sources of copper and tin used in Ugarit's bronze industry has not been found so far. Since the mid-1950s, excavations have found several houses belonging to wealthy merchants that contained archives that are relevant to this discussion of the trade in copper, tin and bronze. The importance of these sources cannot be overstated, and recent textual interpretations by Monroe (2000) and Chanut (2000) are highly relevant to the study of trade in copper and tin during the LBA. Monroe's dissertation adds considerably to the understanding of the role of entrepreneurs generally in Ugarit. Chanut, meanwhile, links texts on Ugarit's metals (and stone and woodworking) industries to regional geology and scientific studies. The texts related to the entrepreneurial merchant class at Ugarit give a unique insight into trade in copper, tin and bronze discussion of these forms the core of this section.

Fortunately, the majority of texts related to international trade found at Ugarit are written in Akkadian. Unlike the alphabetic Ugaritic texts, where both copper and bronze are referred to as *tlt*, the syllabic Akkadian texts distinguish between copper (*êru*) and bronze (*siparu)* (Chanut, 2000: 244), thereby giving better precision. One fragmentary Ugaritic text, RS 18.119, refers to a ship of Alashiya and 15 talents of copper (Chanut,

2000: 262). Unfortunately, the surviving text does not state the intended recipient of this copper.

Texts Involving Rapanu, Yabinu, Rašap-abu and Urtenu

These four merchants were engaged in long-distance trade in many commodities, including metals, and have been singled out here for discussion not only because of references to copper and tin in their archives, but also because each had at least one Cypro-Minoan document either in stratified contexts within his house, or in the case of Rašap-abu, at the surface above the remains thereof. Cypro-Minoan has not been deciphered, and this is likely to continue to be the case in the absence of further major textual finds. However, the significance of the presence of four out of the total known corpus of nine Cypro-Minoan tablets in or near these houses at Ugarit cannot be underestimated (as discussed in Chapter 2) and must surely corroborate the hypothesis that an important relationship must have existed between these merchants and Cyprus. Interestingly, the other five tablets were found at Enkomi (Ferrara, 2004). Two of these (tablets 1885 and 1193) were found in a large metalworking facility in Q1W at the north end of the site (Dikaios, 1963), where copper was being worked on an industrial scale during the LBA. This is discussed later in this chapter. Being only 160 km away from each other, it makes sense that Ugarit and Enkomi would be bound by close trading ties.

Each of the merchants appears to have had several roles in life, including administrative functions linked to the running of the Ugaritic state. This survey deals only with their entrepreneurial activities, and within this subset, concentrates on the trade of metals. Fortunately, literacy appears to have been an important component in the way they conducted their businesses (Monroe, 2000: 172) and the many hundreds of texts recovered from their houses afford tantalising glimpses on the scope of their activities and the code of conduct within which they operated.

Not one among Rapanu, Yabinu, Rašap-abu or Urtenu is mentioned in the lists of merchants that were endowed directly by the Royal Palace (a group contractually obliged to carry out business on behalf of the King (*ibid.*: 123)). All four, however, did also periodically engage in transactions with the Royal Palace, which is discussed at relevant points in the sections that follow.

Rapanu

The Maison de Rapanu is located east of the Royal Palace of Ugarit in the nearby so called Quartier résidentiel, which was originally named the Quartier égéen by Schaeffer due to the nature of the finds there, including a Cypro-Minoan document (Yon, 1997a: 83). The house has 34 rooms and has a floor area of 800 sq m and appears to be made up of two dwellings that each has access to a common area (*ibid.*). The excavations are so far unpublished as priority was given to publishing the 200 or more clay tablets found there (Nougayrol, 1968; Courtois, 1979a: 1253).

Not only did Rapanu have a close relationship with the state but he was also an entrepreneur with diverse contacts in Anatolia, Phoenicia and Upper Mesopotamia (Nougayrol, 1968). Courtois (1979a: 1253-61) adds the Aegean to this list, presumably on the basis of Mycenaean pottery found there. As discussed in Chapter 3, this is not sufficient proof of Rapanu having direct contact with Aegean merchants. I would, however, add Cyprus to Courtois' list. One Cypro-Minoan tablet was found at his house (RS 20.025) (Yon, 1999), and given the rarity of such finds mentioned earlier this surely must indicate that he was involved in trade with Cyprus. Courtois (1979a: 1257) relates opinions that this tablet could be a list of names, given its format.

An Akkadian letter was found in this archive to the king of Ugarit from Padiya, prefect of Kadesh (RS 20.16), the site of the famous battle between Egypt and Hatti in c. 1275 BC and which marked the border between the area of Hittite influence and that of the Egyptian empire (effectively, the border between Zones 1 and 2). This letter details a shortfall in a delivery of bronze and tin. As Chanut (2000: 260-262) points out, this tablet is of interest because it confirms that Ugarit was involved in supplying bronze and tin to at least one other city. It also sheds light on the relative value of donkeys and tin, namely that 10 talents of tin were equivalent to 5 donkeys. Stating the obvious, a donkey was therefore worth two talents of tin – a not inconsiderable amount.

The important commercial role of donkeys is attested in another letter found in Rapanu's archive (RS 20.015). This tablet recounts that a person called Ba'al-alu was responsible for donkeys belonging to Rapanu and that some of these were to be exchanged for a cargo of copper (ingots that had been cast for Rapanu by the sender of the letter, Enbiyanu) (Monroe, 2000: 79). This exchange had proved problematic and the text gives us a glimpse of how one merchant dealt with another to request redress.

As well as being a principal in trade (i.e. the person who bought and sold on his own account and at his own risk), Rapanu also acted as an agent on behalf of the state by supplying services. His role as a supplier of pack animals is alluded to in his dealings with Enbiyanu and another document from the prefect of Ugarit (RS 20.023) reprimands him for delays in obtaining wine, salt and oil for the Royal Palace (*ibid.*: 153). A clear separation of state and private enterprise is, therefore, difficult and Monroe's conclusion that Ugarit's wealthiest merchants accumulated capital by selling both goods and services seems justified (*ibid.*: 334), based on this evidence from Rapanu's house.

Yabinu

To the south of the Royal Palace lies Yabinu's house, which is also known as the Palais Sud (as a result of its large size and 1000 sq m plus floor area). Excavations in 1955 revealed 67 inscribed documents in this mansion, of which 60 were in Akkadian, 5 in Ugaritic and two in Cypro-Minoan (Yon, 1997a: 64; Yon, 1999). Given the foregoing comments about the paucity of known Cypro-Minoan documents, this is the largest grouping outside Enkomi (Ferrara, 2004) and surely attests to close dealings with Cyprus. Textual evidence also documents relationships with various cities to the south on the coast of Syro-Palestine (from north to south: Arwad, Byblos, Sidon, Akko, Ashdod and Ashkelon) (Courtois, 1979a: 1238)

Yabinu is also mentioned twice in Rapanu's archive and 8 times in those of the Royal Palace (Courtois, 1990). The latter include a tablet that records a deal in which Yabinu received tin and iron, among other things (RS 11.795), either from the palace itself (possibly to sell on their behalf), or directly from abroad. In the latter case, the Royal Palace would have needed a record of such a valuable transaction for customs or taxation purposes (Monroe, 2000: 216).

Alongside his commercial activities, and not unlike some members of the upper echelons of some Swiss Banks today, Yabinu held military rank (and belonged to the military élite group the *Mariannū* (*ibid.*: 180)). Rapanu and Urtenu did not belong to this group. Yabinu's own archive also contained the names of Ugaritans resident abroad and foreigners resident at Ugarit (Courtois, 1990), suggesting some kind of administrative role and again possibly blurring the boundaries between state and private enterprise.

Several documents attest Yabinu's involvement in the metals trade. A letter from an individual called Urhae to Yabinu suggests his involvement in trade in bronze hammers, cloth and mules with the Hittites and Egypt (Courtois, 1990). Dealings with Egypt would be consistent with records of contact with the coastal Levantine cities from Arwad to Ashkelon. RS 11.799 accounts for the delivery of tin (20 talents) and iron (2 talents) (*ibid.*). Iron would have been both rare and precious at this time. As already discussed, conclusive proof of deliberate iron smelting during this period remains elusive (contra the evidence cited by Courtois (*ibid.*) for such activity at Kamid el-Loz and Tel Yin'am, later work has called these claims into question). Courtois goes on to speculate that this tin might have arrived in Ugarit in the form of 20 one talent ingots, predicated on the presence of such items in the Uluburun wreck. He further raises the possibility of their re-export to other Syrian kingdoms (Amurru or Kadesh) or to the Aegean. Either way, this is the largest shipment of tin recorded in a single text from Ugarit.

RS 19.007 is another important text from the point of view of Yabinu and the trade in metals. Courtois (1990) calls this statement of account a *bilan* (balance-sheet) in which all the commodities listed are expressed in their convertible value as shekels of silver. This would be a useful format for the Palace to receive such an account as it would simplify the work of taxation or customs officials to calculate the appropriate levy, who would otherwise need to calculate the equivalent value of copper, tin and other commodities listed themselves. Courtois (*ibid.*) goes perhaps further than the *published* evidence justifies by suggesting that Yabinu and the Palais Sud establishment must have controlled the market for the metals required for bronze manufacture at Ugarit, implying a de facto monopoly on their supply regionally. Either way, the glimpses that we do have on Yabinu's dealings confirm that he was a major player on the international stage where copper, tin and bronze were concerned with contacts along the length of the Syro-Palestinian coast, as well as correspondence of some kind with Cyprus to which the reply came in Cypro-Minoan.

Rašap-abu

Due east of the Royal Palace in the Quartier résidentiel is the House of Rašap-abu, which was excavated in 1953. More modest in size than those of the other merchants discussed here (with a floor area of only 80 sq m), it was at the surface at this location

that the first Cypro-Minoan tablet was found at Ugarit (RS 17.006) (Courtois 1979b: 115). Like Yabinu, he was a member of the *Mariannū* military élite.

The majority of texts were written in Akkadian, the longest of which is an account list of different purchases entrusted to several individuals living in different towns in the kingdom of Ugarit. These items include metallic tin and cups made of copper and bronze. The values of all the commodities on the list are expressed in silver (RS 17.150 and 17.030 – Courtois, 1979a: 1251).

Urtenu

The most recently discovered of the private archives discussed here was found in the Sud-Centre part of the tell as a result of a chance find of tablets made in 1973 during the construction of a Syrian army bunker. This part of the tell remained under military control until 1986, when excavations commenced (Yon, 1997a: 97). The house of Urtenu is another large property and some interesting tablets were published in *Ras Shamra-Ougarit VII* (Bordreuil et al., 1991). The full extent of this house has not been defined by excavation, but the excavated floor area shown in Yon (1995) is in the region of 300 sq m.

During the 1994 excavation season, Akkadian textual finds from this house revealed a remarkable number of international contacts, including ones with other parts of the Hittite Empire, Phoenician ports (Sidon, Byblos and Tyre), inland Syrian states, Babylonia and Egypt (Malbran-Labat, 1999; Yon, 1999). More remarkable than all of these were four new documents from Alashiya (Cyprus); up to this point only three Akkadian texts from Alashiya had been found at Ugarit (and, interestingly, these were from Rapanu's house) and these new texts were identified as being Alashiyan from their clay and the specifics of the script and phraseologies used (Malbran-Labat, 1999). Malbran-Labat further proposes that a scribe from Ugarit was based at the Alashiyan court. Goren et al. (2003), based on petrographic analysis of some of the Alashiya correspondence to Egypt and Ugarit, have indicated that in the most likely clay source comes from the region of Kalavassos and Alassa in the south (see Map 11).

One of these letters (RS 94.2475) gives an interesting glimpse on the copper trade between Cyprus and Ugarit (Galliano and Calvet, 2004: 188, catalogue number 177). King Kushmeshusha of Alashiya states his intention to send King Niqmaddu of Ugarit

(who ruled briefly shortly before 1220 BC – see Figure 1) 33 copper ingots of just under one talent each. Although the text does not say anything about the form of these ingots, their weight would be similar to the oxhide ingots found on the Uluburun and Cape Gelidonya shipwrecks.

A tablet found earlier in the Royal Palace of Ugarit (RS 18.024), written in Ugaritic, mentions Urtenu in connection with an substantial consignment of copper and tin. The most likely ultimate destination of this consignment is now generally translated as the bronze smiths of Biruti, the ancient name of Ras Ibn Hani (Bounni et al., 1998: 96). The presence of a town called Biruti within the kingdom of Ugarit makes more sense (from the point of view of other administrative texts) than identifying this Biruti with Beirut in Lebanon (*ibid.*).

A Cypro-Minoan label – RS 94.2328 – was also found in this house (Yon, 1999). Tablets 31, 32 and 33 (Bordreuil et al., 1991), which illustrate the involvement of Urtenu's son in his father's business, corroborate involvement in the metals trade. Monroe (2000: 253) recounts how Urtenu's son was employed by Dagan-belu in Emar at the same time as the latter's son was conveying goods, including metals, to Ugarit.

He sums up Urtenu's position as follows (*ibid.*: 288)

"From the perspective of the many foreign merchants dealing with him, he was in some sense 'the state'; he was also a highly successful individual engaged in capitalistic activities with a staff of scribes and accountants helping him run a firm".

Texts Related to Bronzeworking

About 20 names of *"artisans fondeurs"* are known from the texts of Ugarit (Chanut and Dardaillon, 1999). Administrative texts also speak of raw material acquisition and manufactured objects, indicating that bronze was made in the city and turned into manufactured goods. An Ugaritic text found in the house of Urtenu in 1994 (RS 94.2401) is unique in this respect and mentions quantities of both copper and tin (about 1600 kg in all) (Galliano and Calvet, 2004: 188, catalogue number 175). The proportions of copper and tin were such that tin bronze with 10% tin content could be manufactured. This tablet also mentions what was to be manufactured from this metal, *krkbm* (*ibid.*). The meaning of this word is not known, but as only 40 of these were to be made, each would have weighed 40 kg (*ibid.*).

Unfortunately, the texts are mute on the subject of the workshops and the techniques used to manufacture objects.

Archaeology

Fragments of oxhide ingots of copper were found in 1959-60 in the Ville Sud excavation area (Chanut, 2000: 250), but no tin ingots or fragments thereof have been recorded to date, which means that definitive evidence of the raw materials for bronze production existing in the same place on site has so far not been found.

Early excavation reports, for example Schaeffer, 1963, referred to specific districts within the city where metalworkers carried out their trade. Schaeffer believed that the Sud Acropole area (excavated between 1961 and 1964) contained the highest concentration of finds associated with metalworking and referred to it as a metalworking quarter. Although there is no doubt that metalworking in general, and bronze working specifically, was important at Ugarit, more recent work reviewing Schaeffer's Tranchée Ville Sud excavation (e.g. Callot, 1994: 186) suggests that foundries or furnaces were not present in the houses of the Ville Sud at the end of the LBA. Only one fragment of a tuyère was found in this area (Callot, 1994: 187) in Maison B in Ilôt XIV. However, it seems certain that this small house did not have a furnace and the presence of the isolated tuyère is not sufficient proof of a significant metal workshop in this house. Yon's team found bronze slags in Ilôt I, close to where Schaeffer's excavations had found the ingot fragments referred to earlier (unfortunately, their precise position was not recorded). This could indicate the presence of a furnace, but no remains of one were found. Marguerite Yon (1997b) believes that the existence of metalworking quarters at Ras Shamra cannot be proved and it seems likely that urban craft activities were conducted within 'normal' houses.

The excavators speculate that the heavier end of the metal industry (i.e. smelting and bronze production) may have been present in the city of Ugarit earlier in the LBA, but by this time, they had been moved away from the densely populated areas because of the air pollution they would produce.

Much more is known about the metal industry of Ras Ibn Hani, where major metalworking installations have been discovered (Bounni et al., 1998: 43). A uniquely important find related to the metals trade at Ras Ibn Hani was made in 1982: the only

known oxhide ingot mould was discovered in room XVII of the Northern Palace (*ibid.*). This mould, made of calcareous sandstone (grès calcaire, sometimes mistranslated as limestone) contained traces of copper which mapped to Cypriot sources (*ibid.*: 44), suggesting that this facility may have been used to produce copper ingots of standard weight for re-export. Tribute scenes showing Syrians in the Egyptian New Kingdom tombs carrying oxhide ingots mentioned earlier seem more understandable in light of this discovery at Ras Ibn Hani.

Rooms XVI, XVII and XVIII of the North Palace all contained evidence of metallurgical activity. As already mentioned, Room XVII contained the ingot mould. This room also contained evidence for lead working. Many fragments of crucibles and tuyères were found in rooms XVI and XVII. These crucibles (when reconstructed) have a rim diameter of 32 cm, are flat-bottomed and have an opening at the top rim into which a tuyère can be inserted (*ibid.*: 44). The metalworking installations also demonstrated the use of intense heat, the presence of hard surfaces (possibly for breaking metal pieces or other hard substances) and water channels (*ibid.*: 46).

One theory regarding the presence of lead in the North Palace is that it was used as a medium for embedding the mineral corundum (which was also found in the excavations) which was then used in the polishing and finishing of hard stone or metal objects (a sort of ancient glass or sand paper) (*ibid.*: 49). Of course, lead was also sometimes added to bronze to improve its flow characteristics.

A wide range of bronze objects has been found both at Ugarit and Ras Ibn Hani. Unfortunately, there is currently no consolidated catalogue of Ugarit's bronze finds and the only extant reviews are by Courtois (1975, 1979a). Chavane (1987) catalogued the tools found in the Centre de la ville excavations between 1979 and 1984 (which excavations have been discussed in Chapter 3), which were mainly tools used in daily life in the quarter (*ibid.*: 357). A short report is also included in *Ras Shamra-Ougarit XIV* (Yon and Arnaud, 2002: 123-124) in which eleven more bronze tools are noted from the Centre de la ville excavations as well as some pieces of slag, which appear to have been ubiquitous in the excavations and probably not diagnostic of a workshop. According to Chanut (2000: 228) a forthcoming doctoral dissertation by Ella Dardaillon will catalogue the metal figurines. The extant publications show that the ordinary inhabitants of Ugarit had access to a wide range of bronze objects.

Science

On geological considerations, Chanut (2000: 245) states that the local Baer-Bassit Massif is unlikely to have supplied copper on the scale required at Ugarit. Southern Turkey may have been a source at this time, but the quantity of geological survey data currently available renders a judgement on this impossible (*ibid.*: 246).

From the point of view of identifying the sources of the components of bronze in bronze objects found at Ugarit, unfortunately no large-scale scientific analyses have been carried out. Chanut (*ibid.*: 251) refers to an unpublished suite of lead isotope analyses carried out by N. Gale at Oxford in the mid-1980s on five samples from Ugarit and two from Ras Ibn Hani. According to Chanut, these analyses suggest that the copper maps to three fields: Cyprus, the Ergani-Maden area of Turkey and a third field, which is similar in composition to samples from Crete. The origin of the copper recovered from the oxhide ingot mould of Ras Ibn Hani is Cyprus, based on lead isotope analysis (Lagarce and Lagarce, 1997; Bounni et al., 1998: 44).

Stos (in an appendix to Philip et al., 2003) when discussing the lead isotope analysis of two LBA artefacts from Pella in Jordan states that the Pella objects map within the range of artefacts tested from, among other sites, Ras Shamra. This may be a reference to the unpublished lead isotope analyses of the Louvre objects carried out at Oxford. From the point of view of ore source, Stos states that the closest match is to ores from the Taurus Mountains in Turkey, most notably the Bolkardag area.

These unpublished analyses are, presumably, those mentioned in Stos-Gale (2000) where 60 or so objects from Ugarit and El Amarna are discussed together. These objects produced results suggesting origins for the copper in Cyprus, Lavrion in Greece, Timna in Sinai and at least one other source. However, she cautions the use of these data as the sample is small. The fact that the Ugarit data are grouped together with those from distant El Amarna limits their usefulness in taking the debate on sources of copper at Ugarit at this point. The Ugarit analyses do now appear to be in course of publication (C. Chanut, personal communication, August 2004). The recent catalogue of a major exhibition on Ugarit held at Lyon, while highlighting the importance of Cypriot copper to Ugarit, also mentions assays of bronze objects found at the site that have mapped to sources in Anatolia, Timna and Lavrion (Dardaillon, 2004).

A site with the time depth and importance of Ugarit would clearly benefit from the kind of comprehensive study carried out by Philip et al. (2003) on bronze objects from Pella such that deductions about its copper sources need not be based on such meagre evidence as that presented so far.

Emar

Emar, located on the great bend of the Euphrates at its closest point to the Mediterranean littoral, was an important crossroads of Bronze Age trade routes from the EBA onwards.

Texts

The city features in late third millennium BC texts from Ebla (which document the names of merchants and substantial shipments of clothing and precious metals from Ebla to Emar (Margueron, 1995). The consideration for these goods is not documented, unfortunately, but Margueron believes that Emar was already a key trans-shipment point on the Syria/Mesopotamia trade route in the EBA.

Emar also appears in MBA 18th century BC texts from Mari, further south on the Euphrates (Chavalas, 1996: vii), showing that it continued to be an active participant in trade. LBA texts from Ugarit and Nuzi also mention Emar, and French rescue excavations during the construction of the Tabqa Dam in the 1970s added insight on this place where goods travelling west left the river (Fleming, 1995) and headed towards the coast at Ugarit.

The French excavations of 1972-1976 did not encounter any strata earlier than the LBA and Beckman reports that geomorphological evidence suggests that the EBA and MBA settlements known to exist from texts were located elsewhere, the LBA move having been necessitated by the Euphrates changing course (Beckman, 1996: 4). The LBA city was destroyed in about 1187 BC, based on Babylonian synchronisms (*ibid.*: 5), and the texts document Hittite control from the reign of Mursili II (1339-1306 BC), according to Margueron (1995), and, like Ugarit, it reported to Carchemish. The timing of this destruction is consistent with that of Ugarit, and Emar was not permanently reoccupied again until Roman times. Several hundred written documents were found (tablets or fragments thereof) but, unfortunately, few of these deal directly with trade or shipments of copper or tin. As the majority were found in a temple, they appear to shed greatest

light on ritual at Emar, which seems not to have been much influenced by that of the Hittites.

Nevertheless, a letter found at Ugarit (RS 17.143) refers to an international dispute involving a "man of Emar" that could only have arisen as a consequence of long-distance trade (*ibid.*: 7). No archives belonging to merchants of comparable stature to Yabinu of Ugarit were found, although reference to dealings between Urtenu and a Dagan-belu of Emar involving their sons and the metal trade has been made earlier (see page 134). There is further evidence of families being involved in trade. Monroe (2000: 250-252) discusses a text from Emar (*Emar* 6.3 25) in which a man (Alazaya) requests funds from his wife (Tatašše) at home in Emar. This couple appear to be involved in trade in copper and tin with neighbouring Assyria and this text has two separate small orders for tin (of c. 1 talent each) by two men who bought three talents of copper. Another text (*Emar* 6.3 23) suggests that this married couple is running a customs or trading post of some kind in a building designated as Haus 5 (*ibid.*: 251).

During the early 1990s, the Syrian Antiquities Department re-opened excavations, with the University of Tübingen joining the excavation effort in 1996. Despite extensive looting in the period before excavations were resumed, the new excavations have found MBA and EBA horizons, in addition to the LBA town already known.

Alalakh (Tell Atchana)

This site in the Amuq plain close to the Orontes River was also well connected to metal supply networks at the close of the LBA. It had close connections with the Mediterranean coast (the Orontes would have been navigable to this point) and the Eastern Mediterranean world generally. This is evidenced by quantities of Cypriot pottery from the early part of the LBA (Bergoffen, 2002), an abundant supply of Mycenaean wares (Koehl, 2004) and the frescoes of Aegean affinity found by Woolley's excavations (1937-39 and 1946-49).

Archaeology

In terms of metal objects, these early excavations yielded mainly weapons and tools, the vast majority of which belonged to LBA strata (Levels V to I), although some earlier examples of both classes were encountered, particularly in MBA contexts. (Woolley, 1955: 275-287). Weapons included spear and arrowheads, daggers and knives of

various kinds. A wide range of tools was found, from chisels, hammers, saws and sickles to needles, bodkins and fishhooks. This was a settlement rich in bronze artefacts.

New work undertaken by the Oriental Institute of the University of Chicago commenced in 2000, directed by Aslihan Yener. In light of the early results from a regional survey project, Yener believes that the abundance of quality metal objects both at Alalakh and its neighbouring subsidiary sites of Tell Tayinat, Tell Judaida and Catal Höyük, presents an opportunity to investigate how the bronze industry was organised in this area (Yener, 2001).

She reported in 2002 that Woolley's dig house store depot on the crest of the tell had miraculously remained locked and, in addition to quantities of unpublished imported ceramics and other luxury items, contained important metal finds (Yener, 2002). These included three copper ingots (of bun, crescent and disk type) comparable to those found on the Uluburun wreck (Yener, 2003). Tin bronze objects were also plentiful, as well as stone moulds for casting them. Yener believes that this evidence suggests that there was a "*...thriving exchange production in the eastern Mediterranean...*" associated with these LBA finds (*ibid.*). The systematic approach being applied during the resumed work at Alalakh and its surrounding sites (specifically Tell Tayinat) holds considerable promise to add to understanding of the metals trade in this region not only in the LBA, but also in the MBA and earlier. Suffice to say that metalworking was an important part of the economy of this region which, like Ugarit, lies on a direct route from Emar and the Euphrates to the sea.

Zone L2 – Phoenicia and its Hinterland

Sarepta

The site of Sarepta has already been discussed in detail in Chapter 3 and needs no further introduction here.

Texts

Sarepta was a major port city in the 13th century BC, based on its inclusion in the Papyrus Anastasi in a geographical list alongside Beirut, Sidon and Tyre (Pritchard, 1975: 8). Only a very limited number of inscriptions were found in Pritchard's excavations, however, and these have nothing to add on the subject of trade. Pritchard raises the possibility that the inhabitants of the Phoenician coast used media other than

clay tablets to maintain their records (Prichard, 1978: 110). Papyrus is specifically mentioned as a payment for cedar wood in Byblos in the 11th century BC Egyptian tale of Wen-Amon (*ibid.*), and Pritchard also suggests that the more cursive alphabetic script of Phoenicia would be better written on a medium such as papyrus than impressed in clay.

Archaeology

Metalworking was one of the trades in evidence in Sounding II, X at Sarepta, alongside pottery, olive oil and dye manufacturing. These other trades were much better represented in this 800 sq m excavation, but evidence that bronze objects were cast at Sarepta came from squares II-B-9 and II-C-9 (*ibid.*: 127-128). A rim sherd from a 27 cm diameter crucible was found, which contained slag that had corroded at its surface to the diagnostic greenish colour of copper salts. Slag, pieces of metal and jewellery moulds were also found (*ibid.*).

Evidence for metalworking also comes from Stratum G (the latest of the LBA strata) in Sounding Y (the domestic quarter), where Pritchard compares the architectural elements (a plastered platform possibly for crushing ore along with a drain for waste water) that are similar to those in an installation found at Enkomi in a metalworking context (*ibid.*: 79; Lagarce, 1971: 381-399), namely a cement platform with a drain for waste water. Subsequent to this, the already mentioned discovery of the metalworking facilities in the North Palace at Ras Ibn Hani in the early 1980s yielded a similar platform and drain arrangement, alongside other evidence of metalworking (Bounni et al., 1998 : 44, 46).

Kamid el-Loz

As described in Chapter 3, Kamid el-Loz is a major site at the southern end of the Biqa Valley in modern Lebanon, which has served as a major trade route since the earliest of times.

Texts

Excavations between 1963 and 1981 by a German mission identified the site as Kumidi, the seat of Egyptian administration in the area based on textual finds. Beyond this identification, the textual finds have not added to the understanding of the position of this site within metals trade network.

Archaeology

A major workshop complex was excavated close to the LBA palace and the excavation report (Frisch and Thiele, 1985: 156) summarises the nature of the archaeological evidence for bronze working, namely the presence of intermediate and finished products in the chain of bronze production. This includes metallic copper and slags. However, no copper or tin ores were found (*ibid.*: 157) which is consistent with the hypothesis that primary smelting took place at or close to the mines, not in such urban contexts close to élite buildings.

Crucible fragments were found (Frisch et al., 1985: 118), as were moulds for casting bronze objects (*ibid.*: 100). From the site as a whole, Hachmann (1983) illustrates part of the rich array of bronze weapons that was recovered (including scale-armour, daggers, knives, swords of Egyptian type and arrowheads). In addition, domestic bronze objects included bowls and possibly a frying pan and there were abundant small bronze finds such as needles.

As mentioned in Chapter 3, excavations resumed in 1997 (under the directorship of Marlies Heinz of Freiburg University) and the research goals of the new excavations include investigating the role of Kamid el-Loz within the political economy and settlement hierarchy of the region. As was the case at Emar, much looting took place in the period between the two sets of excavations and hopefully further information on the metalwork, including provenience work, will be part of the revised research programme (which has concerned itself mainly with later periods so far). Like Alalakh and Ugarit further north, bronze objects were relatively plentiful at this site.

Science

Nothing can be said about the sources of copper or tin based on the studies included in Frisch et al. (1985), which concentrate more on metallography.

Tell Dan

Like Kamid el-Loz, Tell Dan has already been introduced in this dissertation in Chapter 3. It is situated at the headwaters of one of the principal tributaries of the Jordan River in a fertile valley at the foot of Mount Hermon (Biran et al. 1996).

Texts

Known as Laish in ancient times, this city was mentioned, along with Hazor to the south in the 18th century BC Mari text A. 1270 (Dossin, 1970). This important text, found in the palace of Zimri Lim at Mari on the middle Euphrates, mentions an individual called Waritaldu of Laish in a very interesting list of tin consignments to Babylon, Aleppo, Ugarit and Qatna, as well as to Laish and Hazor and to a Capthorian, identified as a Cretan by both Dossin (*ibid.*) and Malamat (1993). This tablet is further discussed under Hazor below.

Archaeology

Excavations commenced in the 1960s under the direction of Avrahim Biran. David Ilan has recently taken over as director. Two excavation reports have been published so far (Biran, et al. 1996 and Biran and Ben-Dov, 2002). In 1974, excavations revealed the first signs of a bronze industry at Dan. This was in Iron Age strata dated to the late 11th/early 10th century BC (Biran, 1994: 147). A crucible was found (described as containing "*bronze slag*") inside a stone installation as well as tuyères (*ibid.*). Subsequent excavations revealed more evidence of Iron Age bronze working as well as evidence of bronze working from earlier periods, including an open air furnace in a courtyard dating to the early part of the LBA (c. 1600 BC), crucible remains, tuyères and small metal objects (Shalev, 1993). This would make sense, given that Laish was already taking deliveries of tin from Mari in the MBA, according to the 18th century BC text already mentioned.

The remainder of the Bronze Age material that was not published in the first two volumes of the excavation reports will be published in Dan III, expected in 2005. This will also include a discussion of LBA metalworking at the site (D. Ilan, personal communication, August 2004). Dan IV, when published, will cover the Early Iron Age levels.

The LBA "Mycenaean Tomb" (Tomb 237) has already been discussed in Chapter 3 with regard to its important assemblage of imported ceramics. Using the Mycenaean wares there (mainly LH IIIA:2-IIIB:1), Ben-Dov (2002: 226) dates the inception of burial to the second half of the 14th century BC, but it seems to have continued in use for a few generations, perhaps 60 years, until the LH IIIB:2 style Levanto-Helladic bowls found there (FS 296 – possibly made in Cyprus) were deposited. Ben-Dov (*ibid.*:

228) stresses the parallels between this tomb and those at Ugarit in terms of construction, location within a domestic quarter and the quality and quantity of imported luxuries. She goes as far as suggesting that those interred in this tomb may have had a familial relationship with Ugarit, presumably suggesting trade links between the two family groups.

The principal concern of this enquiry is the array of bronze objects found in the tomb, which comprised an assemblage of weapons (*ibid.*: 119) and vessels (*ibid.*: 200). Weapons included three splendid daggers, one socketed spearhead, some 79 projectile points of various types, as well as many bronze fragments too corroded to identify. One of the daggers of Canaanite type interestingly has a parallel on the Uluburun shipwreck (Pulak, 1997: 248). The bronze vessel assemblage comprised five bowls, a strainer, a lamp and a pan. Two bowls were of a type far more common in Cyprus than the Near East. Unfortunately, no provenience studies are published in this excavation report and, thus, it is impossible to judge which of these objects were made locally and which entered the funerary record by way of acquisition from more distant trading contacts.

Science

Work done by Shalev (1993) shows that the Iron Age I (IA I) bronze smiths of Tell Dan produced their wares by melting scrap bronze. This is corroborated by numerous small pieces of bronze found *in situ* near the installations, which Shalev believes were melted in the crucibles recovered to make tin bronze with variable, and generally low, tin content, over which the smiths had no control. He further believes that this was not an industry producing prestige or luxury products using imported metal, but a local, rather utilitarian one working with whatever was at hand. 18 bronze artefacts tested had tin compositions of 1.2-11%, which variation Shalev states is unexceptional and concurs with Waldbaum's findings for IA I sites in the Eastern Mediterranean (Waldbaum, 1999). Only four of these samples had tin compositions of more than 5% and all four were broken, perhaps awaiting recycling, and perhaps belonging to an earlier time.

Among the eighteen objects tested was a piece of a round ingot, which had no tin and was virtually pure copper, apart from iron and sulphur impurities. Shalev draws attention to the typological resemblance of this object to ones found at sites (Yotvata and 'En Yahav) close to the mining areas of southern Israel (Shalev, 1993).

Biran (1994: 147) states that Shalev's analysis of the composition of slag and metal recovered from Iron Age strata differed from that of LBA samples tested, suggesting different sources for the metal used. Although Shalev mentions in his 1993 paper that he tested one LBA piece of slag and one LBA artefact, this article does not explicitly give the results.

Dan appears to have been well connected to tin supply networks as early as the MBA. Its participation in LBA Eastern Mediterranean trade circuits generally is attested by the rich Mycenaean finds in Tomb 387 which, as we have seen in Chapter 3, may have arrived there via the Phoenician coast up the Litani River valley (see Map 9). Although it is problematic to extrapolate the evidence from this tomb to the settlement, for which we must await publication, the bronze objects therein are nevertheless indicative of the availability of top quality prestige items with an international span of taste to at least some of the inhabitants of the LBA city.

The LBA bronze industry of Tell Dan continues in operation in the Iron Age, albeit on a more local scale. It seems to have functioned primarily by recycling scrap bronze with, consequently, less control over the tin content of the finished product. One copper object appears to be part of an ingot that may have come from southern Israel.

Zone L3 – The Carmel Coast, Sharon Plain and Upper Jordan Valley

Hazor

Texts

As mentioned in Chapter 2 and earlier in this chapter, Hazor is mentioned in the 18th century BC texts from Mari as a recipient of tin. Malamat (1993) refers to 15 documents from Mari that mention Hazor, of which two concern tin transactions (Malamat, 1989: 56-57). The largest consignment is recorded in tablet A. 1270, already mentioned in the context of Tell Dan above. This tablet shows Hazor as the largest recipient of tin from Mari - more than 50 minas of tin, enough to make 400 kg of bronze (*ibid.*).

Archaeology

Hazor is the largest tell site in Israel by a considerable margin. The city grew dramatically in scale during the MBA, when the lower town was constructed, and became comparable in size to Mari, Ebla and Qatna in Syria, with which it had commerce at this time (Malamat, 1989: 55). Two sets of excavations have taken place.

Between 1955-58 and 1968-69 Yigael Yadin excavated the site on behalf of the Hebrew University, supported by funding from the Rothschild Foundation. Excavations resumed in 1990 under the direction of Amnon Ben-Tor of the Hebrew University in a joint project with Complutense University, Madrid and the Israel Exploration Society.

In 1968, rescue excavations as a consequence of modern road works on the southeastern part of the lower city (Area P) resulted in the discovery of three copper bun ingots in a corridor between two rooms in a gate tower (Mazar, 1997: 357). These types of ingots can be produced in the concave bottom of a smelting hearth as well as in ceramic moulds (Rothenberg, 1990: 3). Stratigraphically, they were believed to have come from LBI-IIA (Stratum 1B).

Science

No lead isotope analyses were published in Ben-Tor and Bonfil (1997), the most recently published volume of the excavation report, but a metallurgical study (Roman, 1997) revealed a bulk composition for two copper ingots that were tested as having a relatively high iron content – a characteristic of copper from Israel and Sinai (*ibid.*: 389).

A study by Shalev (1997) on metal objects from settlement and tomb contexts at Hazor concentrates on finds from EB III and MB II assemblages, and does not address those from the LBA or Iron Age I. However, Shalev does allude to the fact that the use of tin bronze reaches a peak in the Late Bronze Age (*ibid.*: 350) at Hazor, in common with the rest of the Mediterranean Basin.

Pella

Moving south of the Sea of Galilee and to the East bank of the River Jordan, Pella is included in this study on the basis of the publication by Philip et al. (2003) of a scientific study of bronze objects dating from the EBA to the Iron Age. It included finds from funerary and settlement contexts, as well as from hoards. The site appears to have been one of the principal gateways for goods from the Mediterranean coast to reach Transjordan via the Jezreel valley from ports such as Tell Abu Hawam, Akko and Tel Nami. Only two cuneiform tablets have been recovered from Pella, which provide no information pertinent to this discussion other than to confirm that there was some degree of literacy there during the LBA (Knapp, 1993: 31).

Archaeology

The excavations at Pella have not revealed concentrations of artefacts diagnostic of specialised metal workshops, but small finds that may turn out to be slag have not been examined by experts in the field (R. Sparks, personal communication, September 2004).

Science

Lead isotope analyses on bronze artefacts have yielded interesting results (Philip et al., 2003). While EBA objects were made of copper sourced from local ore bodies (in this case Feinan in southern Jordan), by the LBA objects found at the site were made from copper sourced from the international trade networks extant at that period, specifically from Cyprus and the Taurus Mountains of Turkey. The Iron Age bronze sample included in this study comprised of six rings and bracelets dating to the late-11th – early-10th centuries BC (the transition between IA I and IA II). All of these objects came from a single tomb and all but one of them had tin content of around, or in excess of, 10%. This suggests that by this stage in the Iron Age, access to optimal quantities tin was not an issue. This contrasts with the slightly earlier evidence from Tell Dan, which suggests tin was scarce there in IA I contexts). Two objects from Pella were subjected to lead isotope analysis and, interestingly, these map to Feinan (Philip et al., 2003), accessible overland, which was back in production at this time (Hauptmann, 2000; Levy et al., 2004).

Akko

Tel Akko today stands about 700 m from the sea on the northern bank of the Na'aman River, some 20 km south of the Lebanese border. Systematic excavations began in 1973 and continued until 1983 under the direction of Moshe Dothan. The excavations have been published only in terms of preliminary reports so far and final publication is being worked on. Some more recent excavation work has been conducted under the directorship of Michal Artzy and Anne Killebrew.

Texts

Akko is among the cities known to have had trading relationships with Ugarit from the texts. Dothan (1976) lists several Ugaritic texts and one Akkadian one (RS 19.042 from Yabinu's archive) that attest these relationships. Akko also features in the Amarna Letters as a flourishing city as well as among the Canaanite conquests of both Seti I and

Ramesses II, the latter event being vividly recorded in the temple of Karnak in Thebes and borne out archaeologically by a destruction layer in the excavation (Dothan, 1989).

Archaeology

The last LBA city at Akko was smaller than its predecessors, but nevertheless contained large, well-planned buildings (*ibid.*). Abundant quantities of Cypriot and Mycenaean wares suggest that the city was still engaged in maritime trade (Dever, 1997c), even if its remains occupied only the northern part of the tell (Dothan, 1989). Dothan's excavations revealed evidence of metal and purple dye industries alongside pottery kilns, some of which he believed were used to produce locally made Mycenaean IIIC pottery (*ibid.*). This, together with graffiti of ships and a scarab of Tewosret, wife of Seti II of Egypt, led Dothan to believe that these levels dated to c. 1200 BC and were evidence of a *Sea Peoples'* settlement (specifically the Shardana). This dating appears to have been based on the high Egyptian chronology, implying that the scarab of Tewosret could not have been made before 1204 BC (Dothan, 1986).

In areas A/B, close to the pottery workshops, several items were found that evidence metalworking. These included circular structures on paved floors, clay lined depressions full of ash, two crucibles, fragments of tuyères, a clay funnel as well as "copper slag" and metal scrap (bronze tools that seemed to have been deliberately cut into pieces for remelting) (*ibid.*).

The final excavation report for Akko has not yet been published, but Aaron Brody, based in Haifa University is working on the LBA and Iron Age publication at present. No scientific studies of the metal objects have been produced thus far.

Tel Zeror

Tel Zeror is located inland on the Sharon plain near a crossing on the Hadera River and the western branch of the major north-south land trade route, the *Via Maris* (Kochavi, 1993). A Japanese mission, led by Kiyoshi Ohata, excavated the site between 1964 and 1974. The LBA settlement, which was found to be unfortified, had a major metal working quarter.

Archaeology

Like Akko, Tel Zeror seems to have fallen victim to the military incursions of Seti I and Ramesses II (Ohata and Kochavi, 1966: 29) and at the end of the LBA also, the lower town was destroyed. During the first season of excavation, an industrial area was excavated. Remains of furnaces were found, along with crucibles with 'bronze slag' inside them (*ibid.*: 26). These remains belonged to stratum 10, the penultimate LBA stratum.

A high proportion of Cypriot ceramics were recorded in this quarter, which raised the possibility in the excavators' minds that Cyprus might have been the source for the copper used in this industry. No assays have been published, but a Master's thesis is currently being produced on Tel Zeror's metal industry under the supervision of Professor M. Kochavi and Dr S. Shalev that is likely to shed light on this subject (S. Shalev, personal communication, August, 2004).

From the currently available evidence, Tel Zeror seems to have had a significant bronze industry of relatively long duration during the later part of the LBA.

Tel Nami

Tel Nami is located between Tell Abu Hawam and Tel Dor, about 15 km south of modern Haifa. The half-hectare site has virtually no agricultural land in its vicinity, as it is surrounded by swampy ground. Michal Artzy, its excavator, is of the opinion that this site owes its existence in the latter part of the LBA to both maritime trade and a strategic location on land routes to the Jezreel Valley (to sites such as Megiddo) and beyond (Artzy, 1997), effectively allowing trade to bypass the Tell Abu Hawam and Tel Dor. The site is in course of being published and the analysis that follows relies on Artzy (1989, 1994, 1995, 1997 and 2000) and Monroe (2000).

Archaeology

The international character of the material culture of this site is striking, both in the settlement and in the graves of Nami East. There was an impressive open sanctuary on the crest of the tell, which included metal working areas (Artzy, 1995: 22). This area has not been fully published yet, but Artzy (*ibid.*: 23) mentions the presence of scrap metal (bronze), metal working tools and parts of crucibles or ovens with traces of metal on them. The sanctuary – metal working association is relatively common in Cyprus

(Artzy, 2000), as is discussed later at sites such as Kition (Karageorghis and Demas, 1985: 253-254) and Athienou (Dothan and Ben-Tor, 1983).

Metal finds in this area were principally bronze scrap and some of the pieces found have similarities with scrap found on the Cape Gelidonya shipwreck; for example pieces of broken incense stands (Artzy, 1995: 25). Bronze scale armour, similar to that found at Kamid el-Loz, was also found, as well as arrowheads both of local type and with similarities to those from the Mycenaean world and Troy (Artzy, 1994). This workshop was violently destroyed at some point when LH IIIB was the predominant Mycenaean style and the area was strewn with both LH IIIB Mycenaean and contemporary Cypriot sherds (Monroe, 2000: 15). Artzy (1997) states that 80 bun ingots were found in the sea, 800 m north of the site. These were copper ingots (M. Artzy, personal communication, September 2004).

The cemetery of Nami East is also characterised by imported Mycenaean IIIB and Cypriot wares (mainly WS II bowls), but this time, they are complete vessels (Monroe, 2000: 16). Many burial customs are exhibited in this cemetery, suggesting a mixed community, and the grave goods are strikingly rich and international in character. In one particular grave an Egyptian scarab ring and a Syro-Hittite signet ring are found in the same burial (*ibid.*).

Monroe (2000: 18) believes that Tel Nami's transitory occupation and exceptional prosperity is consistent with it being a trading post or a landfall for traders. As Artzy has pointed out, architecturally the 13th century BC ramparts of Nami have some similarity to those of Maa-*Palaeokastro* in western Cyprus (Artzy, 1995: 22; Karageorghis, 1990a). Maa-*Palaeokastro* is discussed further, both in this chapter and in Chapter 5.

The lack of nearby agricultural resources would have worried a group of professional, and possibly foreign, traders a good deal less than it would a settled indigenous population. As Monroe concludes (2000: 18) Tel Nami shows evidence of unusual wealth in the material culture of a site that seems to be outside the control of any of the Great Estates (or palace-based civilizations).

Zone L4 – Philistia and Southern Israel

Tell Beit Mirsim

The mound of Tell Beit Mirsim lies in the low hill country southwest of Hebron approximately 30 km inland from the coast at Gaza. It is best known for the fact that W.F. Albright's excavations there in the 1920s and 1930s laid the foundation of the ceramic typology of Biblical Palestine (Dever, 1997d). Its inclusion in this analysis hinges on Albright's recovery of part of a copper ingot and his claims of having found a 'copper' working facility (Albright, 1938: 53).

Archaeology

Albright's excavations were published as Annuals of the American Schools of Oriental Research in 1932, 1933, 1938 and 1944, with the 1938 volume covering the Bronze Age strata. He recounts evidence for copper working in stratum D, attributed to the end of the MBA (Albright, 1938: 53) but by this time the majority, if not all, of the objects cast in this facility would have been tin bronze, not copper. Unsurprisingly, given the early date of the excavations, no scientific studies have been made to resolve this question, but I shall refer to the finds as bronze from this point onwards.

In addition to an array of weapons and tools, this site yielded a limestone mould for casting tools as well as two deep limestone bowls Albright identified as crucibles (*ibid.*). This latter identification seems highly unlikely, especially as no traces of copper or slag were found in them (*ibid.*: 54). However, three quarters of a small copper oxhide ingot were found nearby. This ingot is c. 16 cm long and of the type generally known as miniature ingots, classified by Buchholz as Type 1b (Bass, 1967: 57). At the time of Albright's publication, only Cretan ingots from Hagia Triadha were known (from contexts dating to c. 1600 BC) and Albright considered this ingot to be contemporary.

Tell el-'Ajjul

This site is located 6 km south of modern Gaza and was excavated by Petrie between 1930 and 1934 (Khalil, 1984). Two seasons of excavation have recently taken place 1999 and 2000 (Fischer, 2001). It is now believed that the site may be identified as Saruhen, which is known from Egyptian texts (Fischer and Sadeq, 2000).

Kassianidou and Knapp (2005) have recently included this site in a list of Levantine centres that were active in the metals trade during the LBA. However, there is no *direct*

evidence of this from the site itself, or of bronze metalworking there. This view about the site's involvement in the metal trade has probably arisen from two factors. First, the site was among the wealthiest in the southern Levant during the LBA (which was an impoverished period compared with the preceding MBA, in which strata major gold hoards were found) (Dessel, 1997). A New Kingdom Egyptian garrison was present there, which defended the coastal road from Egypt (*ibid.*). As mentioned in Chapter 1, Egyptian presence at individual sites in the southern Levantine sites generally led to higher prosperity there compared with the situation at neighbouring sites that did not have Egyptians present. Second, as mentioned in Chapter 3, Cypriot wares dominate the site's imported ceramic repertoire during the LBA (Fischer, 2001). This is often taken as a correlate of copper trade with the island. This is by no means impossible, but is not direct evidence of Ajjul's involvement in this trade.

Science

Metallurgical analyses have been carried out on some weapons from Tell el-'Ajjul by Khalil (1984) using Atomic Absorption Spectroscopy to analyse the composition of artefacts from different Bronze Age contexts. They show the usual chronological trend of greater use of tin by the LBA (*ibid.*). Interestingly, Khalil also identified some LBA arrowheads that had had arsenic as the major alloying component (rather than tin) or were made of pure copper. This led to the suggestion (ibid.) that the site may have experienced a shortage of tin (possibly due to disruption or reorganisation of the tin routes at the end of the LBA). Petrie's records are not equal to resolving the precise stratigraphic LBA contexts from which these items came and further excavation will need to take place before this suggestion can be connected with the destructive events at the close of the LBA.

Cyprus

Geopolitical Setting

The economic and political structure of Cyprus in the LBA is the subject of much debate, and one that will receive fuller attention in Chapter 5. Comments here are confined to the metal industry which, like many other aspects of the island's material culture, appears to have been free from the overarching regulation of an administrative bureaucracy. Monroe (2000: 302) summarises the position as follows:

"Despite the obvious interest palaces would have had in controlling the distribution of bronze, there is little evidence for the centralised control of the metals trade."

During the latter stages of the LBA, Cyprus became a major, if not *the* major, supplier of copper to the Eastern Mediterranean. This is a subject on which an immense amount has been written over the past 30 years, yet considerable confusion continues in the literature on the precise nature of the metalworking activities that were carried out in the major coastal urban centres and an up-to-date review does not exist. The Cypriot sites discussed in this chapter and Chapter 5 are shown on Map 11.

The most comprehensive survey of the development of this industry in terms of mining and processing of copper continues to be Muhly et al. (1982). Many individual articles and excavation publications have added considerable insight since this time, for example the excavation report of the MBA Alambra settlement (Coleman et al., 1996) and Knapp (2003). As Kassianidou (1999) points out, one of the main issues about the technology of smelting copper in Bronze Age Cyprus is that, until recently, no smelting furnaces had been excavated, despite the abundance of slag heaps in the Troodos foothills that must, surely, have been diagnostic of such activity (e.g. Skouriotissa) (Bruce, 1937). This survey will concentrate on the evidence from the main urban settlements and the evidence for mining and smelting close to the mines will only briefly be summarised here.

Politiko-*Phorades*, located in the northern Troodos foothills, was identified as a primary smelting site by Knapp and Kassianidou in 1996 following a geomagnetic survey conducted as part of the Sydney Cyprus Survey Project (Steel, 1997-8). Excavations revealed that this site's function was smelting and that there was no settlement identified in its immediate vicinity. Archaeological correlates included two tons of slag, furnace lining and some 20 tuyères. Dating of charcoal recovered suggests a 12th-10th century BC date, while ceramics found in association with the metalwork suggest a MCIII-LC I (Kassianidou, 1999). The preliminary results of excavation at *Phorades* suggest that ore beneficiation and roasting did not take place there and perhaps these activities took place close to the ore body (which is less than 30 minutes walk away from the smelting site (*ibid.*). Analysis of the slags at *Phorades* indicates that no secondary refining was taking place there (based on the presence of copper sulphides and matte in the slag, but the absence of metallic copper therein) (*ibid.*). This supports

the contention, which is explored further in later in this chapter, that primary smelting took place close to the mines, while secondary refining was carried out at urban centres such as Enkomi and Kition.

With respect to evidence for LBA copper mining in Cyprus, obtaining evidence is far more problematic than at Timna in Israel, for example, as the intense modern mining activities in Cyprus have been conducted largely without attempting to record ancient mining sites (Muhly et al., 1980).

Ambelikou-*Aletri* in the northern Troodos foothills has produced the earliest archaeological evidence of prehistoric mining in Cyprus (Knapp et al., 2001). Merrillees (1984) reported that Dikaios' excavations had yielded 19th century BC pottery in mining galleries. Unfortunately, only a brief investigation of the site was possible before modern mining activities commenced (Knapp et al., 2001). The site of Apliki, likewise, was also not fully excavated or published. Du Plat Taylor conducted rescue excavations in the 1930s (*ibid.*). Mathiati lies in the eastern foothills of the Troodos, about 14 km southwest of Nicosia. A fragment of an oxhide ingot was found there (Bruce, 1937) in a hoard context (Muhly et al., 1980). Although Mathiati lies in a mining area, therefore, LBA evidence for mining has so far not been found.

Turning to other sites at which metals have been found but, seem to have been sanctuaries, Athienou and Myrtou-*Pighades* appear to be sites at which ritual activities were pursued next to areas where metalworking was practised but have no sign of domestic settlement. Athienou, located between Nicosia and Larnaca, was excavated by Trude Dothan and Ben-Tor between 1971 and 1972 and appears to have been in use between the 16th century BC and the mid-12th (MC III-LC I to LC IIIA). A few pottery sherds of MC III-LC I type were found (Dothan and Ben-Tor, 1983: 139) but the bulk of the material dates to the 14th and 13th centuries BC. Maddin et al. (1983: 132-138) produced an analysis of the metalworking facilities and concluded that primary smelting did take place at the site, which is 8 km distant from the Truilli mine and 20 km away from the Sha mines. Dothan and Ben-Tor (1983: 140) conclude that the site was a station on a trade route between the mines and Enkomi and, later, Kition.

Myrtou-*Pighades*, meanwhile, is also a LBA sanctuary site located not far from the NW coast of the island which was excavated by du Plat Taylor between 1949 and 1951 (du

Plat Taylor, 1957). The site was operational between MC III-LC I and LC IIIA and was a specialised sanctuary site with evidence of metalworking (Knapp, 1997: 54).

Returning to discussion of the urban settlements of LBA Cyprus, as already mentioned earlier in this chapter, evidence for primary smelting is scarce. The presence of slag has all too often been taken as being diagnostic of this activity, irrespective of the quantity or nature thereof or whether copper ore was present. Far more likely is that copper ore underwent primary smelting at or close to the mines, close also to sources of timber for fuel, the product of which was further refined at the major coastal centres (Koucky and Steinberg, 1974). In general, therefore, LBA urban metallurgy in Cyprus may be considered to begin with refining the products of primary smelting and end with manufactured items. An exception to this may be Maa-*Palaeokastro*, where Zwicker (1988) has identified smelting slag, although no copper ore was found in the excavations. Maa is only 30 km from the nearest copper ore outcrop (*ibid.*).

Texts

Texts dating to the end of the LBA concerning Cyprus' involvement in the metal trade are few and far between and these have already been discussed in connection with Ugarit. Consequently, there are no site-specific sections on texts in the discussion that follows. In addition, scientific work is discussed for the island as a whole, as a number of studies (e.g. Knapp and Cherry, 1994; Stos-Gale et al., 1997; Stos-Gale 2000) have already considered the data in this way and this will follow the analysis of the evidence from individual sites.

Major Coastal Urban Sites

The major coastal sites listed in Table 14 are discussed first. This table summarises the evidence from excavations. The heading 'Workshops' means a building containing evidence of either furnaces, crucibles or tuyères. Three pieces of slag do not make a workshop in this thesis.

Table 14: Major Coastal Cypriot Urban Metalworking Sites

Site	Size ha	Location	Metalworking				Date
			Workshops	Ingots	Moulds	Slag	
Kition	70	South East	✓			✓	LCIIC- LCIIIB
Palaepaphos	65	West		✓		✓	MCIII-LCIIIB
Maroni	25	South		✓		✓	MCIII-LCIIC
Hala Sultan Tekke	24	South East			✓	✓	MCIII-LCIIIA
Enkomi	16	East	✓	✓	✓	✓	MCIII-LCIIIB
Toumba tou Skourou	15	North East				✓	MCIII-LCIIC
Kourion	6	South West	✓				LCIA-LCIIIB

Source: Knapp, 1997: 54 for estimates of size.

The table also gives an indication of the size of each of the settlements quoted directly from Knapp (1997: 54). Some of these sites continue to be occupied beyond the end of LC III and this will be discussed in Chapter 5. Iacovou (2004) recently rehearsed a number of reservations concerning the way some of settlement sizes have been calculated by different excavators and commentators. These are likely to be subject to significant revision as better information becomes available. She particularly drew attention to Palaepaphos, where the settlement is poorly defined and, if all the cemeteries were included in the calculation, the area would be 144 ha. Iacovou reported that recent work on tracing the wall around Palaepaphos suggests that the Iron Age cemeteries of Skales and Plakes lay without it, rendering the lower estimate given in the table above a better guide to scale. With regard to Kition, the other large settlement, Iacovou suggests that Knapp and others have overestimated its size. The estimate of 70 ha assumes that a partly excavated city wall followed the low plateau on which it was built. She points out that LC material has been found in the southern half of the plateau and that Enkomi (which has a well-defined city wall) is only seen as one of the smaller of the principal urban centres as Kition's size has been artificially inflated.

Kition

Ancient Kition lies beneath the modern city of Larnaca today, on the south east coast of Cyprus. It had a good harbour and was surrounded by fortifications from its foundation in LC II to the Classical period. Kition became a Phoenician colony in the 9th century BC (Karageorghis and Demas, 1985: 4). LBA metal workshops were found in Area I and further evidence for metallurgy came from a religious context in Area II (Stech et al., 1985). Unlike the situation at Enkomi, where recording methods have not allowed metallurgists to reconstruct an accurate picture of the nature of the copper industry there, the archaeological record at Kition has allowed the experts to draw some conclusions. Stech et al. conclude that the workshops in Area 1 had furnaces, but that

these were more likely to have been used to heat crucibles, rather than being copper smelters (*ibid.*: 393). Operations date to LC II and seem to be *"cottage industries"* (*ibid.*) connected with substantial domestic buildings, arguing against central control of the industry.

Area II (containing the Northern Workshops) has yielded evidence of copper production from the 13th century BC to the Classical period. LBA remains appear to be associated with a temple (*ibid.*) but here, too, there is no evidence for smelting of copper ores. Nor did the excavations reveal whether this workshop produced votive items for the temple or more general denominations of copper ingots or manufactured bronze items (*ibid.*: 401) as no moulds at all have been recovered in Kition (Karageorghis and Kassianidou, 1999).

Karageorghis and Kassianidou have recently reviewed the evidence from Kition to take account of advances in this field since the original excavation report was produced (*ibid.*). They comment that the relatively small amount of slag found in Kition, together with absence of direct evidence of smelting (in the form of furnaces) is consistent with the proposition that primary smelting did not take place in urban environments such as this. They conclude that the Northern Workshops within the sacred precinct at Kition were involved in refining copper and bronze casting and that recycling bronze may have been another activity carried out there (*ibid.*).

Palaepaphos

This site on the west coast of Cyprus is likely to have been one of the largest in LBA Cyprus. Its true extent is not known, as only limited excavations have taken place in the settlement site. These took place between 1966 and 1984 (under the Swiss-German Expedition), building on work carried out by British excavators between 1950 and 1955 (Maier and Karageorghis, 1984). The earlier expedition had excavated a large number of LC tombs while the latter has proved beyond doubt the existence of a substantial town.

The LBA settlement has not been dug to anything like the same extent as Enkomi, as the remains lie under later archaeological horizons and a modern village. Excavations revealed remains of settlement from the late Middle Cypriot period onwards. The evidence from the settlement at Palaepaphos is too sparse to confirm or deny the

existence of a destruction horizon at the end of LC IIC. Evidence for destruction currently hinges on the presence of fire-blackened pottery in the wells at Evreti (*ibid.*: 79). Consequently, the site has been excluded from those shown on Map 1, which shows the fate of major sites at the close of the LBA across the Eastern Mediterranean. Palaepaphos did not move its location, as did Enkomi to Salamis, at the end of the LC IIIB and there is every indication that Palaepaphos continued to function as a major city in the Cypro-Geometric period (*ibid.*: 126). This continuity is explored in Chapter 5.

LBA metal workshops are attested by the presence of copper slag, according to Maier and von Wartburg (1985), but few details have been published. This site has great potential to add to the understanding of western Cyprus' role in LBA trade.

Maroni

The Maroni area is situated on the south coast of Cyprus, east of Kalavasos and the Vasilikos Valley. Several archaeological sites lie close to Maroni, of which *Tsaroukkas* and *Vournes* are the most important for this enquiry. A British Museum excavation took place in 1897. More recently Maroni *Vournes*, 500 m inland on a low hill, was excavated by Cadogan on behalf of the University of Cincinnati in 1982 (Cadogan, 1983). Manning and De Mita (1997) refer to *Vournes* as an élite centre within the context of the other sites in the Maroni area. Maroni *Tsaroukkas* is located right on the coast and has been the subject of the *Tsaroukkas*, Mycenaeans and Trade Project under the directorship of Manning since 1993 (*ibid.*). *Vournes'* earliest habitation is LC IA (Cadogan, 1994) and the site is abandoned before LC IIC ends.

Vournes

Cadogan (1996) recounts that evidence of copper working was recovered from LC IIB levels, and perhaps earlier, but he does not state explicitly what the evidence is. A building next to the LC IIB floor on which this evidence was found (the so-called Basin Building) contained a basin that had copper debris in its bottom and an industrial function is not ruled out by Cadogan (*ibid.*). An ashlar building (which Cadogan believes to have been both built and abandoned slightly earlier than that in Kalavasos-*Ayios Dhimitrios*) also contains signs of "*...metalworking with secondary smelting (much furnace charge) and melting.*" (*ibid.*: 17). In addition bronze and copper tools and scrap were found, mainly in the fill below the floor of this building.

Oxhide ingots from Maroni are referred to in articles on lead isotope work (e.g. Stos-Gale et al., 1997: 108). The exact context in which these four ingot fragments were found has not been published yet.

Tsaroukkas
In 1994-5, a large building complex (Building 1) dating to LC IIC based on ceramics was excavated (Manning and De Mita, 1997). Finds contained a few pieces of slag and some metal sheeting, from which the excavators suggest that metalworking was one of its functions. More slag was found in Building 2. This settlement shows evidence of having been abandoned in an orderly way, having been swept clean of its contents, rather than destroyed (*ibid.*).

Hala Sultan Tekke

Hala Sultan Tekke is located on the west bank of the Larnaca Salt Lake on the south coast of Cyprus. Having been excavated by the British Museum in 1897-8, the Swedish Expedition resumed excavations in 1971 and has been working at the site since. The site is published in 11 volumes so far (Åström et al. 1976-2001). The site was a flourishing harbour from approximately 1600-1100 BC (Åström, 1996) and was abandoned before the end of LC IIIA.

Survey work in the early 1970s revealed copper slag in many places on the site (Åström, 1982) and these relate to deposits from the 14^{th}-12^{th} centuries BC. In terms of the published excavation reports, the evidence for metalworking is relatively sparse. Three pieces of copper slag were found in a rubbish pit close to building B, two of which had two flat sides, possibly from a corner of a smelting furnace or an oven (Åström, 1989: 38), and the excavator refrains from making claims that this pit had been a rubbish dump for a copper smith based on this scant evidence (*ibid.*: 39). Excavations between 1976 and 1978 yielded some evidence of hearths in Trench 22 (square 1, layer 2), from which small pieces of slag were also collected (*ibid.*: 68). In Trench 23, excavated in 1974, a pit was found that contained *"... refuse from copper smelting... "* (*ibid.*: 103). This evidence is listed as being pieces of charcoal, copper slag and a ceramic tuyère. The presence of slag may suggest copper working/bronze production, as do moulds for casting arrowheads, possibly scale armour and jewellery (Åström, 1996). The excavation of Room 94N in 1996 and 1997 added further evidence of copper working, including an oven containing ashes, tuyères and a stone mould for

casting sickle blades and terracotta moulds for casting bronze stands (the first such found in Cyprus) (Åström, 2000). Excavations in 1996 and 1997 revealed further evidence of metalworking (Åström. 2000) and finds included tuyères and a clay mould for casting tripods – a unique find in that material (stone moulds for tripods being known at Enkomi) (*ibid.*). Based on this, while there is evidence of copper working and bronze casting, no conclusive evidence has been found so far for copper smelting at the site.

Enkomi

I have already discussed the Enkomi excavations extensively in Chapter 3 and the site's important bronze industry will now be reviewed. Many full-sized oxhide ingots are reputed to have come from the ruins of Enkomi, but relatively few have come from official excavations. (Lagarce and Lagarce, 1986: 66). One ingot (now on display in the British Museum) and a fragment were found by the British excavators in 1896. The French mission also found a fragment in 1949 (from a LC II context according to Schaeffer's notes) and a half ingot in 1966 from a context in Q6W that was too disturbed to be useful stratigraphically (*ibid.*). From this, the Lagarces conclude that oxhide ingots were known in Cyprus during the 13th century BC, if not the 14th.

In addition to full sized ingots, six miniature ingots have also been found there, of which four carried incised marks that were added after the metal had cooled. Three of these were found either in the Sanctuary of the Horned God, or in its immediate vicinity (*ibid.*: 67). These ingots are of the same type already mentioned in the section on Tell Beit Mirsim, which is the only example of this type found in Syro-Palestine. Other than the Tell Beit Mirsim example, the seven other known miniature ingots were found in sanctuaries or religious contexts – in Cyprus (Alassa and Mathiati), Egypt (in foundation deposits of the Theban funerary temple Merneptah – Siptah and Queen Tewosret) and at Tarsus. A bronze stand in the British Museum (said to be from Kourion) and a fragment of one in the Royal Ontario Museum in Toronto depict men carrying ingots (Karageorghis and Papasavvas, 2001) and Lagarce and Lagarce (1986: 67) cite these as evidence of the connection of the copper industry with religion. Interestingly, the man carrying the ingot in the Kourion stand appears to be dressed in Syrian clothes, according to Lagarce and Lagarce (*ibid.*).

The earliest evidence of metalworking at Enkomi comes from the Middle Cypriot III (MC III) period (Stech, 1982), in the so-called fortress area at the north of the site, and bronze working was a major industry throughout the site during the LBA. Enkomi, consequently, has the deepest history of bronze working of any of the Cypriot urban sites. This northernmost quarter of the site (Q1W) contains the greatest concentration of metal workshops in stratified deposits covering the occupation history of the site, with the earliest MC III layer being on bedrock (Courtois, 1982; Dikaios, 1969: 499). This is consistent with the Mari archives which mention obtaining copper from Alashiya. While he admits that the early evidence for smelting was "*scanty*" (*ibid.*: 504), Dikaios believed there was large scale copper smelting at Enkomi during the 16th and 15th centuries BC (*ibid.*: 505), based on the archaeological evidence, which included tuyères and crucibles and slag, but no ore.

Courtois' survey of the bronze workshops and objects of Enkomi (Courtois, 1982) documents several dozens of workshops all over the excavated parts of the site (shown on a map in this publication: Figure 1, p. 156, which also records the location of ingots, hoards and slag in the excavated areas). Unfortunately, recording methods in these relatively old excavations have not allowed archaeometallurgists to reconstruct much, with certainty, about the industry at Enkomi. Metalworking took place in many different locations on the site but primary smelting was not carried out there, based on analysis of slags and the absence of ores (Stech, 1982).

Although much of the copper processed (refined) at Enkomi was probably destined for export, the town also had a major bronze manufacturing industry (Lagarce and Lagarce, 1986: 61). The bronze objects recovered from Enkomi, and evidence for their manufacture on site, are extensive (*ibid.*). All classes of objects, including spectacular figurines (the "Dieu au lingot" and the "Dieu aux longues cornes") and bronze stands, were manufactured there alongside more mundane tools and weapons (*ibid.*: 62). According to Lagarce and Lagarce, these bronze smiths appear not to have specialised in any one category of object, judging from the contents of so-called founders hoards.

Toumba tou Skourou

This site in northwest Cyprus close to the modern town of Morphou was excavated by a joint expedition from Harvard University and the Boston Museum of Fine Arts between 1971 and 1973. Work was interrupted by the Turkish invasion of 1974 and relatively

little of the site had yielded habitation deposits by this time. In any event, the site had been badly damaged by modern activity prior to excavation, so that the best-preserved areas excavated were underground tombs (Vermeule and Wolsky, 1990: 3).The site was founded in the latter part of MC III and continued to be occupied until Cypro Geometric I (*ibid.*: 17)).

Despite the political situation and the poor state of preservation of the site, the excavation report was published in 1990 with strong caveats about the incomplete treatment of the results (*ibid.*). The excavation report contains an appendix on Technical Analyses (*ibid.*: 401-403) in which Muhly is quoted as saying that a sample of slag contained abundant copper-iron-sulphur matte, the product of initial smelting of an iron-sulphide copper ore such as chalcopyrite. Muhly suggests that this slag was the product of direct smelting of ore, which may have come from the Mavrovouni mine nearby (*ibid.*: 402). Muhly (1982) states that this piece of slag is the oldest to be tested from Cyprus, being from the 16th century BC. Stech (1982), in the same volume, is more cautious and, based on a single sample of slag, is not prepared to go beyond stating that metal was worked at the site but that the precise nature of the process is unlikely to be determined due to the poor preservation of the remains.

Among the bronze finds recovered, mainly from tombs, the range of objects is wide, encompassing many types of weapons, tools, jewellery and fragments of bronze vessels (*ibid.*: 326). All but two out of 170 or so objects are of native Cypriot types. LM IA ceramics are relatively well represented in the tombs at Toumba tou Skourou (*ibid.*: 358) and Muhly (1982) suggests that copper may have been shipped in the opposite direction from Morphou Bay. Toumba tou Skourou also had a large ceramics industry, which the excavators point out would, like the copper industry, be supported by the presence of abundant timber close at hand in the Troodos foothills (Vermeule and Wolsky, 1990: 203).

Kourion-*Bamboula*

Kourion lies on the south west coast of Cyprus and excavations of the Bronze Age settlement of Bamboula, strategically located on a hill nearby was begun by a University of Pennsylvania expedition in 1937 under the direction of John Daniel. As was the case at Enkomi, LBA tombs had been examined by the British Museum in the late 19th century (and inadequately published). Excavations were interrupted by the

Second World War and curtailed by Daniel's death in 1948 and only minor exploration has taken place since then – in the early 1950s by Weinberg and Benson (Weinberg, 1983: 2). The site was occupied from LC IA until its abandonment in the LC IIIB period (*ibid.*: 52). A destruction took place at the end of LC IIC (Knapp, 1997: 54).

Area E was excavated in 1939 and a 'hearth area' (*ibid.*: 49) was found where several hearths were located within an area of about 20 sq m (with some of them stacked above each other). Benson returned to this area and describes it as containing a metal mould, (or moulds) (1970: 34) and many crucible fragments. From this Weinberg deduces that there was a small local copper smelting industry there during the LC IIB and LC IIC periods (Weinberg, 1983: 29).

Other Coastal Settlements

Two other coastal settlement sites have been excavated in which important evidence of metalworking has been found, as can be seen in Table 15.

Table 15: Other Cypriot Coastal Sites

Site	Size ha	Location	Metalworking				Date
			Workshops	Ingots	Moulds	Slag	
Maa-*Palaeokastro*	5	West	✓	✓		✓	LC IIC –LC IIIA
Pyla-*Kokkinokremos*	3	South East		✓		✓	LC IIC

Source: Knapp, 1997:54 for estimates of size.

Maa-*Palaeokastro*

Maa-*Palaeokastro* was occupied for a brief period straddling the LC IIC – LC IIIA periods, defined by the styles of Mycenaean pottery found there, including locally made LH IIIC wares. Maa was abandoned in LC IIIA. Dikaios excavated the site briefly in 1954 and Karageorghis conducted a more substantial excavation between 1979 and 1986 (Karageorghis and Demas, 1988).

The site lies on a peninsula on the west coast of Cyprus, north of Palaepaphos. Its natural defences are further augmented by fortifications. On either side of the peninsula are two bays that could act as harbours (see Map 13) and each of these contained springs that could have provided fresh water to the settlement and to ships anchoring there. The role this site may have played in trade between the Aegean and the Levant is explored at greater length Chapter 5.

Several copper oxhide ingot fragments were found in Building II dating from the first period of occupation of the site (LC IIC) (Muhly and Maddin, 1988). Also found were a lump of copper slag, a bronze weight in the shape of a fish and a fragment of a pot bellows (Karageorghis, 1987: 116). Pot bellows were used to produce a charcoal fire with temperatures of up to 1250° C during the LBA (Zwicker, 1988). Muhly and Maddin use this evidence to suggest that some sort of metalworking was taking place at the site. Room II itself seems to have been some sort of storage room and the presence of clay sealings led them to speculate whether Maa was an administrative centre for the distribution of, among other things, copper (Muhly and Maddin, 1988). Elemental analysis was carried out on these ingot fragments, but not lead isotope analysis. The ingot was high purity copper with arsenic, cobalt and nickel as trace elements (which is similar to one of the two Pyla-*Kokkinokremos* oxhide ingot fragments referred to in the next section, which had a lead isotope signature consistent with a Cypriot source for the ore) and Maddin and Muhly concluded that it was the product of a refining process, rather than that of a smelting furnace. No lead isotope analyses were published in the excavation report, but Stos-Gale et al. (1986) include analyses of bronzes from Maa that are consistent with Cypriot copper ores.

No copper ore was recovered from the excavations (Zwicker, 1988). Zwicker concludes from analyses of slag and metallic material at Maa that smelting, as well as melting, or refining, took place at Maa, which is only 30 km from the nearest outcrop of copper ore. Furthermore, he identified a piece of slag diagnostic of the production of an arsenic-tin-bronze, indicating that bronze was made there too.

Pyla-*Kokkinokremos*

This site, which overlooks Larnaca Bay, was only occupied for a brief period at the end of LC IIC (no Mycenaean IIIC pottery was found) and, as was the case for Maa, following some initial work by Dikaios in the 1950s, Karageorghis excavated the site. Two seasons of excavation took place in 1981-1982 (Karageorghis and Demas, 1984: 1-2). The site is located on a plateau, about 800 m from that coast (*ibid.*: 3). The plateau may have been surrounded by water in antiquity raising the possibility of an anchorage. Pyla also controls the pass connecting the Mesaoria plain with the Larnaca area (*ibid.*: 5), in which the major sites of Kition and Hala Sultan Tekke lie. The site was fortified (*ibid.*: 69).

A hoard was found in Room 22 of Complex B that contained bronze items and fragments of copper oxhide ingots (*ibid.*: 12); this hoard was found close to a large pit that contained what is termed copper slag by the excavators. This association led them to believe that this was a metalworking area. The so-called founder's hoard contained a bronze male statuette in addition to bronze weights, cymbals, scale armour, drills, a spearhead and two bowls in addition to the copper ingot fragments (*ibid.*: 55-56). Overall, based on their condition, the excavators considered some of the objects to be scrap, awaiting remelting (*ibid.*: 63). In addition to this a fragment of a copper slab ingot was found (c. 10 cms long in its found state, oblong – rounded at one end and broken at the other) that had Cypro-Minoan signs inscribed on it (*ibid.*: 33, catalogue no. 8 where it is described as bronze but analysis showed it to be almost pure copper – see below). The excavators point to similarities with the slab ingots found in the Cape Gelidonya shipwreck (see page 171 for further discussion).

Gale and Stos-Gale (1984: 96-103) carried out lead isotope analysis of two samples from the oxhide ingot fragments and one from the slab ingot from Pyla. Elemental analysis showed that these were all almost pure copper (*ibid.*: 103), with the major impurity being arsenic. Lead isotope analysis showed that the oxhide ingot fragments mapped to a Cypriot ore source, but that from the slab ingot did not (*ibid.*: 100). The possibility of an Anatolian source for this ingot is mentioned, but this could not be proved from the data available.

This site was abandoned while LH IIIB ceramics were still in circulation and never resettled and the site was only occupied during the LC IIC period, possibly for only 25-30 years (Karageorghis and Demas, 1984: 70).

Inland Cypriot Urban Sites

Table 16 lists inland settlement sites that have shown evidence of metalworking.

Table 16: Inland Urban Sites

Site	Size ha	Location	Metalworking				Date
			Workshops	Ingots	Moulds	Slag	
Alassa	13	Troodos		✓		✓	LCIIC– LCIIIA
Kalavasos-*Ayios Dhimitrios*	12	South East		✓		✓	LCIIC
Sinda	5	East				✓	LCIIC-LCIIIA

Source: Knapp, 1997:54 for estimates of size

Alassa

Alassa lies inland of modern Limassol at the confluence of the Kouris and Limatis rivers close to the foothills of the Troodos in South West Cyprus. Following a survey in 1983 (when a decision had been taken to construct a dam on the Kouris river), excavations were conducted between 1984 and 1987 (Hadjisavvas, 1986) and were resumed in 1991 (Hadjisavvas, 1994). The early excavations concentrated on the lower part of the settlement. There was no trace of LH IIIC pottery (Hadjisavvas, 1986) suggesting that the site was abandoned prior to this period, although there was no sign of destruction. Evidence of metallurgical activity cited by Hadjisavvas (*ibid.*) comprises slag, copper sulphate (sic?) ore and bellows as well as part of a miniature bronze oxhide ingot of the type already mentioned in connection with Enkomi.

The second series of excavations concentrated on the upper part of the LBA settlement. Hadjisavvas (1994) concludes a brief report by saying that copper was transported to Alassa from different areas and the possible use of iron arsenide ore (from near Limassol) is consistent with high arsenic bronze found in slag from the earlier excavations of the lower town. Not enough detail has been published as yet to corroborate this further, and more excavation will be required to reveal a more complete picture of Alassa's involvement in the copper trade.

Kalavasos-*Ayios Dhimitrios*

Kalavasos-*Ayios Dhimitrios* lies about 3.5 km from the south coast of Cyprus, some 200 m west of the Vasilikos River (South et al., 1989). It is well located for conducting trade between the Kalavasos copper mining area, which lies about 8.5 km to the north, and the coast (South, 1983). The settlement remains date to the LCIIC period only, but earlier tombs from LC IIA and LC IIB lie nearby (South et al., 1989). It seems to have been abandoned, rather than destroyed before the end of LC IIC (*ibid.*).

Modest quantities of slag and a few indicators of metal working have been found throughout the excavated zones with the best evidence for a workshop coming from Building IX, which South et al. (1989) characterise as a copper smith's workshop and residence. Here were found crucible or furnace lining fragments, ash near a furnace/hearth, bronze tools, bronze scrap and copper oxhide ingot fragments and she interprets the activity behind this assemblage as being small-scale private enterprise

(*ibid.*). The relatively small quantities of slag found at the site would suggest that smelting did not take place there.

LCIIA tombs in the area (notably Tomb 11) suggest the site was already wealthy by this time. South speculates that a large building (Building X) that contained storage facilities and inscribed documents (five small clay cylinders with multi-line Cypro-Minoan inscriptions) might be diagnostic that a well-run bureaucracy oversaw commercial activities in this area (*ibid.*).

Goren et al. (2003) have recently shed light on the possible location of Alashiya, based on petrographic studies on more than 300 tablets from Ugarit and el Amarna. This work suggests that the clay originated form the margin of the Troodos Mountains, with Kalavassos-*Aiyos Dhimitrios* and Alassa-*Pano Manadilaris* as possible sources – not Enkomi. The exceptionally rich epigraphic finds made at Ugarit in 1994 (described when discussing the merchant Urtenu's archive) included at least four new tablets mentioning Alashiya prior to which only one letter from Cyprus was known at Ugarit (Bordreuil and Malbran-Labat, 1995). This correspondence might, therefore, have come from the area of Kalavassos.

It is interesting that this site is abandoned before LC IIIA, despite its strategic location close to the Kalavassos mines. Could this disappearance be a reflection of lower demand for copper, assuming the mines were not worked out? Did one of Kalavasos' major trading partners cease to require copper at this time?

Sinda

Sinda is located in the Mesaoria Plain, about 32 km east of Nicosia. Furumark excavated the site in 1947-48 and the excavation publication has only recently been produced (Furumark and Adelman, 2003). The settlement was inhabited between LC IIC 2 and LC IIIB (*ibid.*: 27, 73). The site was destroyed at the end of LC IIC but was rebuilt.

Its location was strategic, being on the only crossing of the Pedhieos River between Idalion and Athienou to Enkomi (*ibid.*: 66), and the excavators believe that the site's major role was to control the copper trade. The only evidence of metal working at the site itself appears to be slag (*ibid.*: 71) and only a small collection of bronze artefacts

have been found, which may be explained by the fact that the site was abandoned, rather than destroyed. It may be interesting that this site is established at the end of the LC IIC period, either at the same time or possibly slightly after Kalavassos-*Ayios Dhimitrios* and Maroni are abandoned on the South Coast, but while Enkomi is still functioning.

Scientific Studies on Cypriot Ores and Artefacts

As described earlier in this chapter, the principal proveniencing tool for Cypriot ores and bronze objects regionally has been lead isotope analysis. Issues regarding the validity of this method have been addressed to a large extent, but Gale (2003) identifies ways in which others (principally Knapp, 2000, 2002) have misunderstood these data.

Stos-Gale et al. (1998) in an important paper expanded the published corpus of lead isotope data five-fold for copper ores from Cyprus. They also added to the published body of lead isotope data from oxhide ingots. New ore samples from 26 copper deposits were tested, with the total number of oxhide ingots in this data set being 78.

The early discoveries of oxhide ingots from Cyprus, as already mentioned, were often without context, particularly at Enkomi. Recent excavations, at Kalavasos-*Ayios Dhimitrios* and Pyla-*Kokkinokremos*, have provided well-stratified contexts. All of these ingots are of LC IIC date (South, 1989; Karageorghis and Demas, 1984: 12). One key finding from the large body of data now available for copper oxhide ingots and ore sources is that all copper oxhide ingots from post-1250 BC contexts (including examples from Greece, Crete, Bulgaria, Turkey, Cyprus and Cape Gelidonya) were made from Cypriot copper ores from the Apliki mining area of Cyprus (Gale, 2003; Pulak, 2001). This is not the only active mine, however, and the Politiko-*Phorades* mining area also supplied copper for tools and weapons tested in Oxford (Gale, 2003), although direct evidence of LBA mine-workings have not been found.

Of Cypriot bronze artefacts tested at Oxford using lead isotope analysis, the vast majority, unsurprisingly, map to the same fields as Cypriot copper ore sources. Only six artefacts (three from the Middle Cypriot period and three from the Late Cypriot) out of some 500 tested produced a signature consistent with copper ores from Lavrion in Greece (Stos-Gale, 2000). Among the objects tested at Oxford, very few of the objects from the Aegean are made of Cypriot copper (Muhly, 1996).

Evidence from Shipwrecks

During the last 40 years, two shipwrecks have uniquely contributed to research on the maritime dimension of trade in copper and tin during the LBA. First Cape Gelidonya (Bass, 1967) and then Uluburun yielded large quantities of copper and tin ingots (see Table 17). In each case, these two metals were the principal cargoes of these ill-fated voyages dating to c. 1200 and 1300 BC respectively. An extensive literature exists for Uluburun, on which finds research continues (see Pulak, 1997, 2000 and 2001 for recent bibliographies). Unfortunately from the point of view of analysis of the metal trade, the Point Iria ship excavation in the Gulf of Argos (Phelps, et al., 1999), which appears to have sailed at roughly the same time as the Gelidonya ship, did not yield evidence of a metal cargo. Perhaps this had already been unloaded in Crete or some other point en route from Cyprus (both Cypriot and Cretan ceramics were found), but we will never know whether this was the case.

Three other groups of ingots were found offshore Israel in the early 1980s. Five tin bun ingots and one copper oxhide ingot were recovered from the Carmel coast at Kfar Samir near Haifa during 1982, accompanied only by stone anchors, making precise dating within the LBA impossible (Galili et al., 1986). A second group was found at Kfar Samir, about 1km north of this find, which included 8 tin ingots and 5 lead ingots (along with stone anchors and an Egyptian khepesh sword characteristic of the LBA (Raban and Galili, 1985; Kassianidou, 2003).

The other group was found offshore the Kibbutz ha-Hotrim a few km south on the same coast comprised lead ingots, copper ingot fragments and scrap bronze along with stone anchors and pottery sherds (Wachsman and Raveh, 1981). This assemblage was tentatively dated to the later part of the LBA or IA I.

This discussion will focus on the quantities of copper and tin recovered and the presence or absence of scrap bronze as well as on the scientific research undertaken on the finds and the implications of this on maritime trade circuits. Some ingots have marks incised on them. These will not be discussed specifically here as little specialist work has been done on their identification beyond the observations of archaeologists about possible parallels with various scripts, (see Kassianidou, 2003 for discussion). Some marks resemble Cypro-Minoan signs, but it is too early to draw conclusions from

the work done so far about what the implications of this might be for the role of Cypriots in trade. Kassianidou (*ibid.*) has used the presence of these marks on tin ingots from the coast of Israel to postulate a major role for Cyprus in the trade of tin. Perhaps these ingots were being transported on Cypriot ships, but based on the evidence presented in this chapter, it seems likely that these must have come initially from Ugarit.

Table 17: Summary of Copper, Tin and Scrap Bronze Shipwreck Finds

Ingot Type	Cape Gelidonya	Uluburun	Kfar Samir 1	Kfar Samir 2	ha-Hotrim
Copper					
Oxhide	34 + 5 ½ ingots	354	1		
Bun (plano-convex)	c.20	121			
Fragments	Many	10-15			1
Tin					
Oxhide	N/A	3			
Bun (plano-convex)	N/A	Yes	5	2	
Fragments	Yes	Mainly		8	
Bronze Ingots	Yes	No	No	No	Fragments?
Scrap Bronze	Yes	Minor Amounts	No	No	Yes
Date	c. 1200 BC	c. 1300 BC	LBA?	14-13C BC?	LBA/IA I?

Kfar Samir 1 = Galili et al., 1986); Kfar Samir 2 = Raban and Galili, 1985.

Cape Gelidonya

Archaeology

Excavated by a University of Pennsylvania Museum team in 1960, the Cape Gelidonya ship contained both copper and tin ingots, as well as scrap bronze tools which are believed to be raw materials for recycling (including broken ploughshares, axes, adzes, chisels and casting waste). At least 34 copper oxhide ingots were on board, weighing an average of 25 kg, as well as plano-convex bun ingots of about 3 kg each and fragments of each type that had been deliberately subdivided into smaller units (Bass, 1967: 52, 78). Unique among the shipwrecks, flat oval bar ingots (called slab ingots by Bass) were also found (Bass, 1967: 52). The latter appear to have been made of bronze (Artzy, 1995: 25) and a piece of such an ingot was found by Artzy (1994) at Tel Nami (as well as broken up scrap for recycling). Tools used for metalworking were also found on the wreck (such as stone hammers) and consequently the presence of an itinerant smith has been postulated.

Science

The presence of the ingots both from Cape Gelidonya and Uluburun at the Museum of Underwater Archaeology at Bodrum has resulted in similar programmes of analysis to be carried out on each, despite the twenty or more years that separate their excavation. A comparative lead isotope study of Cape Gelidonya and Uluburun copper ingots and Cypriot copper ores published in Stos-Gale et al. (1998) shows that the lead isotope signatures of all of the 77 oxhide and 34 ingots and fragments of ingots tested from Cape Gelidonya are consistent with Cypriot ores, but did not overlap with those from Uluburun (see below). As mentioned earlier, the Cape Gelidonya ingots, like all others from post 1250 BC contexts, map to the Apliki mining area (Gale, 2003). As one hundred years approximately separate the two ships, it is entirely possible that the mine from which the Uluburun copper emanated had been worked out by the time the Gelidonya ingots were cast (Pulak, 2000: 150).

Uluburun

The Uluburun wreck, discovered in 1982, represents the vestiges of a far richer cargo than that that of the Cape Gelidonya, which dates to a century later. The excavations not only enable a bill of lading to be drawn up for this exceptionally diverse cargo (Monroe, 2000: 12) but also sheds light on such issues as how that cargo was positioned on the ship and details about the ship's construction. Dendrochronological dating of firewood suggests a date of 1306±2 BC for the wreck (Pulak, 1997: 257), which is consistent with the recovery of a LH IIIA: 2 kylix (see Figure 1).

Archaeology

Monroe (2000: 341) has calculated that the Uluburun ship carried a cargo of more than 19 tons (of which copper and tin ingots represented 10 and 1 tons respectively). Copper was mainly in the form of oxhide ingots (see Table 17) and out of 354 ingots recovered, 165 have been weighed and found to range in weight between 20 and 30.5 kg (Pulak, 2000: 143). A histogram in this publication shows a peak at 23.5 kg but they would have originally weighed more than this prior to corrosion and perhaps approximate to a one talent weight. The copper bun ingots also vary in weight; 113 have been weighed with a mean weight of 6.2 kg (*ibid.*).

Pulak also reports (*ibid.*: 144) that about four dozen bun ingot fragments were among the cargo that had been broken to provide smaller transaction units. This process had

not always been easily executed, judging by the scars on some of the ingots that remained intact. At least 160 of the cleaned oxhide ingots contained incised marks, usually on their upper surface. About half of the bun ingots were similarly marked, usually on their mould-side. Similar marks also appear on some of the tin ingots, lending credence to the hypothesis that these marks related to the distribution operation, rather than the production process itself (*ibid.*: 146).

Unlike the copper ingots, most of the tin ingots on the Uluburun ship had been broken into smaller fragments prior to transport. Only three intact tin oxhide ingots were found.

Science

Lead isotope data, together with trace element analysis, imply that the source of all the copper ingots was remarkably homogenous. It is probable that they were Cypriot in origin. As already mentioned, the Uluburun ingots that were subjected to lead isotope analysis by Stos-Gale et al. (1998) mapped in a tight group that did not overlap with the Gelidonya ingots, but still lie within the boundaries of the Cypriot ore signatures known, but cannot be attributed to any known mine (Pulak, 2001).

Lead isotope analysis of tin is at a preliminary stage of development and can only be used in tin objects or ingots as the lead isotope signatures of bronze objects would be principally controlled by the copper component (Gale, et al., 2002). The Uluburun tin ingots do not map to Eastern Europe (the Erzgebirge) or, in my view unsurprisingly, Cornwall (Pulak, 2001). Some of them map to the Taurus Mountains of south-central Turkey but the second of the two clusters do not map to any known source. The Kfar Samir tin ingots from near Haifa map to the same source as the second group of Uluburun tin ingots (Pulak, 2000: 155), which contain lower lead concentration than the other group.

Discussion

All four zones of the Levant either contained copper sources or were within relatively easy reach of LBA sources of this metal. All four have evidence of bronze working, but quantity of evidence is not uniform across them. The same questions will now be asked of the data presented in this chapter as were asked of the imported ceramic record at the end of Chapter 3. These questions relate to the intensity of this trade and how it evolved through time, whether there is evidence for specific nodes in the network acting in an

intermediary capacity and whether trading relationships were similar or different along the coast of Syro-Palestine. Given its role as a major copper supplier, the Cypriot evidence is integrated into this discussion.

Intensity of the Copper, Tin and Bronze Trade and its Evolution

Cyprus is attested as a supplier of copper to Mari in the early second millennium BC, and the 14th century BC Amarna letters also contain many references to copper production on Cyprus/Alashiya or interruptions to it (e.g. EA 35, 10-15 (Moran, 1992: 107)). This is consistent with evidence from the Ambelikou-*Aletri and* Alambra excavations, which date to the MBA but no Cypriot oxhide ingots have been found from such early dates. When these come from datable contexts, they generally come from the 13th century BC, with the Uluburun cargo being the earliest. As discussed earlier in this chapter, the ingot samples from Maa-*Palaeokastro*, Pyla-*Kokkinokremos*, Kalavasos-*Ayios Dhimitrios* all come from contexts dating to the second half of this century.

The lead isotope data from the earliest known copper oxhide ingots from 16th century BC Crete do not map to any ore body that has been fingerprinted by that technique, which probably rules out Cyprus now that such a thorough review of Cypriot ores has been carried out. However, recent evidence presented by Poursat and Loubet (2004) from the *Quartier Mu* at Malia in Crete from the Middle Minoan II period (18th century BC) does map certain bronze objects to Cypriot copper sources using lead isotope analysis. This quarter had a significant bronze working area that was making tin bronze during this period. This important presentation showed that several copper sources supplied the smiths of the *Quartier Mu* in this early period and nine separate sources were identified. Poursat and Loubet (*ibid.*) reported that one of these had a signature very close to that of the Kalavassos mines while the majority of the material mapped to other Cypriot and Anatolian ore bodies. One ore source that registered high lead isotope ratios remains unidentified by this team, and Laurion seemed only to have supplied the copper for one object – a weight. This new evidence supports the proposition that Cyprus was involved both in trade with the Euphrates Valley to the east via Ugarit and Crete in the West before the beginning of the LBA.

The review of the sites at which urban metallurgy took place in Cyprus revealed that several of these were short-lived, being established in LC IIC and either being abandoned at the end of that period (c. 1200 BC) or during the succeeding LC IIIA in

the early 12th century BC. This matter is explored at greater length in Chapter 5 (see Figure 17) but suffice to say here that these urban centres may have arisen in response to greater demand for Cypriot copper. The timing of their abandonment is such that it may well have been tied to the disappearance of their customers for good (as in the case of Ugarit) or the general disruption in the trade routes at the end of the LBA.

Tin itineraries connecting Mari on the Middle Euphrates with Ugarit, Alalakh, Ebla and cities as far south as Dan and Hazor have been discussed (Dossin, 1970; Malamat, 1993; Margueron, 1995). By the 18th century BC tin appears to have been transported overland along organised networks to the major cities of the Levant. These texts also attest contact as far afield as Cyprus and Crete (Margueron, 1997). Significant percentages of tin in the bronze objects analysed from the *Quartier Mu* at Malia, where almost a third of the bronzes tested had tin content in excess of 5% (Poursat and Loubet, 2004), might provide supporting evidence of this tin trade.

Mari was sacked and destroyed by Hammurabi of Babylon in c. 1760 BC (Margueron, 1997). After its destruction, Emar further north along the Euphrates seems to assume Mari's role as the point of departure from that valley towards the cities of the coast. The texts from Ugarit, and to a much lesser extent those from Emar itself, document the relationship between the Euphrates Valley and the Syrian littoral during the later stages of the LBA.

The textual evidence from Ugarit reveals the roles individual entrepreneurs played in the metals trade and the fact that Cypro-Minoan tablets are found in their houses suggest close contact with the island. Their Akkadian and Ugaritic archives attest trade in tin and copper – not only the acquisition of raw materials for Ugaritic consumption, but also for onward trade in these metals. Archaeological evidence of metalworking within urban contexts exists at Ugarit but the more interesting information comes from its subsidiary site, Ras Ibn Hani, where the only oxhide ingot mould yet known was discovered in 1982. This unique find points strongly to some form of re-melting operation in the North Palace of that settlement to produce copper oxhide ingots for on-shipment. Surely, if this copper had been for local use at Ugarit and its neighbouring settlements, the effort and energy would not have been expended to cast the metal into this internationally recognised form?

The amount of scientific research published on metals at Ugarit is disappointingly low, and we must hope that this changes in the near future. As already noted, the excavators of Ras Ibn Hani did have copper traces from the used oxhide ingot mould tested and the source appears to have been Cyprus. Objects tested by Gale and his team at Oxford during the 1980s from Ugarit and Ras Ibn Hani are as yet unpublished, although there are signs that this may soon change (C. Chanut, personal communication, August 2004). Chanut (2000: 251) has hinted that these samples map to three orogenic fields: Cyprus, the Ergani-Maden area of Turkey and a third, unknown, field. This, at least, confirms that Ugarit had copper from several sources, including Cyprus and Turkey as well as the unknown source (which is apparently similar to that found in Cretan contexts that cannot yet be pinpointed).

Given its strategic location, it is not surprising that Ugarit should have had access to copper from several sources during this period. A similar picture comes from objects tested at Pella in Zone L3. Philip et al. (2003) have demonstrated the integration of this site into LBA trading networks by showing that objects from LBA contexts map to both Cypriot and Turkish Taurus ores.

By the end of the 13th century BC, clear evidence begins to emerge of scrap metal recycling from Tell Dan, Tel Nami, Akko and the Cape Gelidonya shipwreck as well as Pyla-*Kokkinokremos* and possibly Enkomi on Cyprus. Interestingly I have not come across any evidence of scrap recycling at Ugarit, which lies at the junction of copper and tin routes and whose supplies of both metals seem to have continued up to its destruction. Drawing too many conclusions from this is problematic, however, as one excavator's scrap is another's broken knife or arrowhead.

If we lack scientific data from the LBA, then the situation is no different in the earliest periods of the Iron Age. Pella, which stands as an example of what can be achieved by a scientific programme comprehensively integrated into archaeological enquiry, is the exception. On this site, Philip et al. (2003) have been able to show that sources of copper for bronze change in the Iron Age and become more "local", namely the objects map to the same lead isotope signature range as Feinan. This mining district, interestingly, comes back in production at this time, having not been active during the LBA. Perhaps it is coincidence that this area in southern Jordan is not worked when the

international trade networks are at their peak but comes back into production when these break down.

Accepting that the data are very incomplete, the overall impression one is left with from this extensive review of texts, archaeology and scientific studies is that Zones L1, L2 and L3 were generally better supplied with bronze and its components for their own consumption than Zone L4 during the later stages of the LBA. On the other hand, direct evidence from the southernmost Levant (Zone L4) is very sparse, with only Tell Beit Mirsim yielding part of an ingot and evidence of LBA metalworking. The small amount of scientific evidence from LBA weapons found at Tell el-'Ajjul suggests that tin may have been short there, with arsenic bronze being used in its stead or even unalloyed copper. Despite their relative proximity to the Timna copper mines, which were in operation at this time, there is little evidence that the inhabitants of Zone L4 saw much of this copper. Timna seems to have been mined by Egyptians (or at least under their supervision) for Egyptians. Greater distance form the Emar-Ugarit tin route may have had something to do with this, as well as from Cyprus and its copper (although in the latter case, large quantities of Cypriot ceramics at Tell el-'Ajjul recently reported by Fischer (2001) would appear to attest strong contacts there). As the evidence is so sparse, an open mind must be kept on this subject pending further excavations.

The limited amount of Iron Age evidence available argues for less extensive trade networks and greater dependence on fewer, less distant, copper sources. Evidence from Tell Dan suggests that there was less control over tin content in bronze, suggesting that the industry was sourcing its tin from recycled bronze in IA I. As attested by the Pella evidence, bronze objects continue to be made and their tin content is once more in the region of 10% by the IA I/IA II transition.

Direct or Indirect Mechanisms

Quantifying how directly trade was conducted between centres engaged in copper and tin supply is not an easy task. First, the degree of survival of bronze in the archaeological record is considerably lower than that of, for example, the imported ceramics reviewed in Chapter 3. As we have seen, recycling is in evidence in the later stages of the LBA and in times of crisis individuals are more likely to flee clutching their tools or weapons than their favourite Mycenaean stirrup jar. Secondly, in the absence of texts, shipwrecks or donkey caravans miraculously preserved in the

archaeological record, the itineraries through which metals arrived at their point of deposition are impossible to prove. If provenience studies have been carried out, as is sometimes the case for copper, then the initial source of that metal may be traceable but the intermediate links in the supply chain may still elude us.

Against this rather pessimistic background, what can be said about the mechanisms of trade? The first step is to identify major centres that appear to be the initial recipients of copper or tin within a region. This is not the same as merely correlating the distribution of ingots, as these may have been on-shipped from the initial recipient from the mine. From the analysis included in this chapter, the only coastal Levantine site that can be identified as a major primary recipient of consignments of both copper and tin is Ugarit (taken together with the evidence from its subsidiary site of Ras Ibn Hani). Tin ingots found offshore the Carmel Coast of Israel attest their trade southwards along this coast from an unknown port. A delivery route for tin overland along the Euphrates from sources in Central Asia must be the working hypothesis until evidence to the contrary arises and the texts of Ugarit confirm the involvement of Ugarit in the supply of this metal. There is no need to suggest that Ugarit controlled this trade in a monopolistic fashion (contra Courtois, 1990). However, given the extent of the Hittite Empire at this time, the fact that the Emar-Ugarit route would have been wholly within it and reasonably safe, this geographically direct route is by far the most logical to use for supplying tin to the wider markets of the Levantine coast and the Eastern Mediterranean.

The shift of the Euphrates nexus of the tin trade from MBA Mari (which had produced documentary evidence that it supplied cities in Zones L1, L2 and L3) northwest to LBA Emar followed the sack of Mari in the mid-18th century BC. Hittite control of this area from the mid-14th century BC (and the relative weakness of Assyria at this point) could have provided the conditions under which the majority of this tin could have proceeded to Ugarit. This was the Hittites' premier Mediterranean port and it is perhaps logical that tin would move preferentially to Ugarit in this situation rather than following the diverse southerly itineraries that existed in the MBA. In any event, Hazor and Tell Dan were by then in the Egyptian sphere of influence.

As we have seen, there is textual evidence that Ugarit sent both tin and bronze to Kadesh (literally on the border between the Egyptian and Hittite Empires). Its textual

record, for example Yabinu's archive, also attests contacts on maritime routes along the coast of the Levant in a southerly direction. The archaeological, textual and scientific data all attest close contacts with Cyprus. These may have been closest with Enkomi, the nearest major town. Copper bun ingots found offshore near Tel Nami and the tin ingots already mentioned from another point on the Carmel coast may have reached there via Ugarit, but we have no way of proving this.

There is some evidence, therefore, that Ugarit was a major intermediary in the metals trade in the Levant. Some of it is hard evidence (such as that coming from the archives of major entrepreneurs) but the majority is circumstantial (such as the ingot mould used to cast Cypriot copper into oxhide form at Ras Ibn Hani). No other site either in Zone L1 or elsewhere in the Levant has produced more evidence of a primary role in the tin trade. Based on the evidence from Tell Dan IA I contexts, this trade seems to have declined appreciably after the fall of Ugarit (and the Hittite Empire) well before iron became the metal of choice in the region for tools and weapons. Until evidence to the contrary comes to light, it is valid to propose as a working hypothesis that Ugarit was the most important land-sea interface in the trade in tin in the closing decades of the LBA. It was also engaged in trade of copper (including that from Cypriot sources) and bronze manufactured items.

Similar or Different Trading Relationships

The foregoing discussion has justified the hypothesis that Zone L1 played the key role during the LBA in tin supply and was also heavily engaged with Cypriot copper. It had relationships with the Euphrates and with other Levantine ports to the south. The assemblage of bronze objects at Ugarit, mainly from tombs and hoards, is outstanding in the range of weapons, tools and figurines recovered. Recent discoveries or, more accurately, rediscoveries at Alalakh suggest that this site was also a regional centre for bronze working of considerable importance and may, eventually, provide clarity on relationships with, for example, the suppliers of copper in Turkey and the role they may have played regionally.

Zone L2 also was well supplied with metals in the LBA with particularly rich assemblages at Kamid el-Loz and Tell Dan, sites that have also provided evidence of bronze working. This area was under Egyptian control, with Kamid el-Loz being a regional administrative centre located on the main land route through the Biqa Valley

linking Syria to the south. Unfortunately, scientific studies have not defined the likely origin of the raw materials for these assemblages as yet. LBA metalworking facilities at Sarepta have architectural similarities to those excavated later at Ras Ibn Hani and earlier at Enkomi. Sadly, our lack of knowledge concerning Tyre and Sidon is a major gap in the evidence, as is the absence of textual finds. The results of the Sidon excavations, as they relate to the LBA/Iron Age transition are eagerly awaited.

In Zone L3, the excavators of Tel Zeror remarked upon the large quantities of Cypriot pottery found in association with the metallurgical workshops there and suggested that Cyprus was the source of this copper. As discussed earlier, we must await the results of work being done currently on the Tel Zeror material for corroboration, or otherwise, of this hypothesis.

Tel Nami, with its extraordinary wealth of bronze objects, is a very important site in this analysis. From the material published so far, its international character is striking. Nearby, some 80 copper bun ingots were found as well as bronzework that has a very Cypriot style (such as incense stands). Overall, close contact via maritime trade routes seems a certainty and Artzy (1995) has also drawn attention to the architectural similarities of 13th century BC Tel Nami and those of contemporary Maa-*Palaeokastro* in western Cyprus. Again, we must await scientific studies before hailing Nami as a gateway for Cypriot copper into the Levant, but there are strong hints of a direct link between Nami and Cyprus. Hazor, meanwhile, based on elemental analysis, seemed to be getting its copper from Sinai, while Pella appeared to be accessing international networks that supplied copper from several sources.

In Zone L4 no major metalworking centres dating to the LBA have been excavated on coast. Tell Beit Mirsim, located inland on a major trade route, yielded a part of miniature copper oxhide ingot fragment. In terms of its metal industries, this is the region that we know least about. Among the Levantine zones, Zone L4 is likely to have been the most closely administered by the Egyptians, being the closest to the borders of Egypt. LBA sites in this region are generally a shadow of what they were in the MBA, possibly a function of Egypt's wish to control this area tightly to prevent a repetition of the Second Intermediate Period, when Egypt was under the control of the Hyksos, who probably hailed from southern Canaan.

Conclusions

This chapter has highlighted the gaps in the archaeological and textual record as well as the absence of scientific studies at some very important sites, including Ugarit itself. Nevertheless, an impression does emerge of a trading network in which Ugarit (and its contacts and suppliers on the Euphrates, in Cyprus and possibly Turkey and elsewhere) played a major role in the distribution of both copper and tin regionally. No other centre has so strong a claim for fulfilling this role. Some of the Cypriot centres could well have been copper suppliers to the Levant in their own right, without the involvement of Ugarit, but any tin they shipped to other destinations would have had to come from the mainland to the island first.

Ugarit's destruction and abandonment, together with that of Emar, and the fall of Hittite imperial authority would have had consequences of regional scale for the way bronze manufacturers sourced their metal. Recycling of bronze is well acknowledged in the archaeological record by 1200 BC, but after the fall of Ugarit, perhaps this became the *only* way to continue to make tin bronzes for some considerable time. Evidence from Cyprus suggests that several urban settlements that had being active in the bronze industry ceased to function around the time of Ugarit's demise, or shortly thereafter. It seems reasonable to propose that the demand for Cypriot copper in Zone L1 would have fallen with such important centres as Ugarit and Alalakh out of the equation. This question is investigated in Chapter 5, but could this be an early example of production capacity being taken out when demand for copper has fallen, or indeed copper working and bronze manufacturing retrenching to fewer centres when access to tin becomes more unpredictable?

CHAPTER 5: CONTINUITY AND CHANGE IN TRADE FLOWS

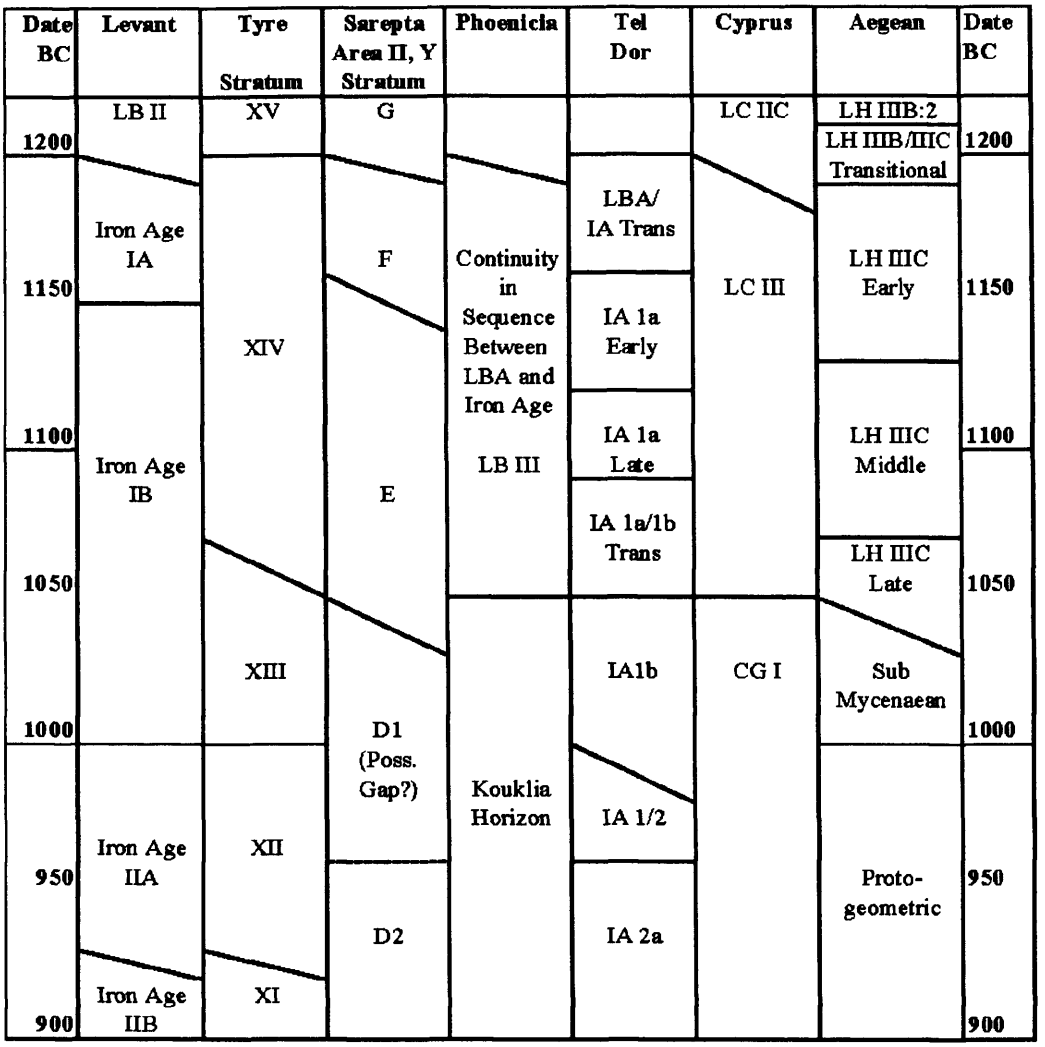
The analysis of imported ceramics in the Levant and that of the trade in copper, tin and manufacture of bronze presented in the previous two chapters has underlined the importance of Cyprus within Eastern Mediterranean trade networks at the close of the LBA, both as a primary supplier of raw materials and manufactured goods and as an intermediary. However, the variation in the imported ceramic record of the Levantine coastal sites discussed in Chapter 3 suggests that trading relationships with both the Aegean and Cyprus may well not have been uniform in their intensity along the length of the Syro-Palestinian littoral. Before attempting to gain better precision on how trade was conducted between the Levant and the Aegean, therefore, concentrating on how the various LBA Levantine ports interacted with Cyprus seems a sensible first step. Nor should the picture of these relationships be considered to be a static one. As Manning and De Mita (1997) have pointed out, Cyprus' position within these trade networks has also changed through time and it is, thus, a good focal point for the diachronic study of shifting alliances within the Eastern Mediterranean trade networks. This is particularly relevant to the transition from the LBA to the Iron Age, when major restructuring of the LBA trading relationships must have taken place.

As already discussed, the coast of Zone L2 emerged unscathed from the carnage that afflicted ports elsewhere in the Levant, both to the north and south of this region. Chapter 3 identified Sarepta in this zone as having an anomalously high amount of Mycenaean ceramics, especially transport-storage vessels. This suggests that it might have had a more direct relationship with the Aegean for the acquisition of these ceramics (and/or their contents) than the other representative Levantine coastal sites examined.

It should be noted that this chapter refers to the timing of the transition from the LBA to Iron Age from a Levantine chronological perspective, rather than the Cypriot view of this. The latter usually presents the LBA ending and the Iron Age beginning in c. 1050 BC with the advent the Cypro-Geometric (CG) I period (Steel, 2004: 13 - Table 1.1). Consequently, prior to embarking on this analysis, it is essential to define the relative chronologies of the LBA/Iron Age transition and the Early Iron Age (IA I) in more detail.

Figure 16 shows the correlation of the Levantine ceramic chronology to that of Cyprus and Greece. It also shows the Iron Age stratigraphic sequences of Sarepta, Tyre and Tel Dor, which are discussed later in this chapter. This figure has been compiled using conventional chronologies and sources (which are noted in its footnote). It does not reflect recent absolute dates such as Wardle's (2004) suggestion that the Mycenaean period ended about 50 years earlier than reflected in this figure, or radiometric dates from Tel Dor (Gilboa and Sharon, 2003: 55, Table 21) that suggest the IA I/II transition about 100 years later than conventionally thought.

Figure 16: Relative Chronology of the Early Iron Age



Source: Mazar (1993): 30 for the Levant; Nunez (2004): 286, Fig. 138 for Tyre, Phoenicia, Cyprus and the Aegean post-1100 BC; Anderson (1988): 422-423 for Sarepta; Gilboa and Sharon (2003): 55, Table 21 for Tel Dor and Tyre (pre-1100 BC); Steel (2004): 13, Table 1.1 for Cyprus pre-1100 BC.

Following the list of questions outlined at the end of Chapter 2, this chapter investigates whether the Linear B archives of the Mycenaean palaces can reveal anything about the nature of Aegean/Levantine trade during the LBA and also considers the very limited textual evidence from the early part of the Iron Age. It then examines further how Zone L2 of the Levantine coast might have conducted more direct trade with the Aegean than the other Levantine zones during the LBA before discussing the evidence for the survival of parts of this network into the IA I, after Ugarit's destruction, and what products might have been traded. Finally, what part, if any, intrusive population

elements played in the reshaping the economy in the formative years of the Iron Age is considered for the different parts of the Levant.

Linear B Levantine Toponyms and Ethnonyms and Iron Age Texts

Linear B Textual Sources

The existence of a *direct* trading relationship between the Aegean and Ugarit is not borne out in the rich textual records of Ugarit (as discussed in Chapters 2 and 3). Looking at this question from perspective of the Linear B sources, Yasur-Landau's doctoral dissertation (2002) examined the extent of knowledge of foreign lands within these archives. The sections of his analysis that pertain to the Levant and Cyprus are summarised in Table 18 (his analysis also identifies ethnonyms and toponyms in Egypt, Anatolia, the Ionian Islands, Mainland Greece, Kythera and Crete).

Table 18: Cypriot and Levantine References in the Linear B Sources

Ethnonym	Translation	Archive	From
pe-ri-ta	"man from Beirut"	Knossos	Zone L2
tu-ri-jo	"man from Tyre"	Knossos and Pylos	Zone L2
po-ni-ki-jo	"man(?) or spice(?)from Phoenicia"	Knossos	Zone L2
a-ra-da-jo	"man from Arad/Arvad"	Knossos	Zone L2
ku-pi-ri-jo	"Cypriot"	Knossos and Pylos	Cyprus
a-ra-si-jo	"Alashiyan"	Knossos and Mycenae	Cyprus

Source: Yasur-Landau, 2002: Chapter 2, Section 2.3.3 (with references)

Yasur-Landau notes (*ibid.*; personal communication, May 2004) that neither Ugarit nor any site in modern Israel is mentioned in these archives. Meanwhile, Cypriots are mentioned in more than one archive while four separate names in Phoenicia (coastal Zone L2), namely Beirut, Tyre, Arwad (Arvad) and Phoenicia itself are represented in at least one archive. Simply the absence of reference to Ugarit and the southern Levantine coastal cities might be argued to be an artefact of the very partial nature of these archives. However, when taken together with the *presence* of Cypriots and four different ethnonyms from Zone L2 therein, this pattern must surely have some significance. Moreover, it matches the pattern described already for Ugarit characterised by Singer (1999: 676).

The Iron Age

Cyprus is the critical gap in the textual record of LBA trade (Monroe, 2000: 358). As already noted in Chapter 4, the number of Cypro-Minoan clay tablets recovered in Cyprus is extremely low. This suggests that Cypriot archives were either not as

extensive as their mainland counterparts at the close of the LBA or they were kept in different media. Papasavvas (2003a) has recently suggested that styli found in Late Cypriot urban centres such as Enkomi (LC IIIA or IIIB contexts) and Kalavassos-*Ayios Dhimitrios* (LC IIC contexts) could attest the use of waxed wooden tablets, such as that found on the Uluburun wreck, as a writing medium.

The evidence from the Iron Age is even more limited. Liverani (1997: Figure 3) draws attention to the spread of alphabetic writing westwards along the trade routes of the Iron Age from the Levant. Cyprus would have been one of the first to be influenced by this development, based on the continuity of trade between Phoenicia and the island documented later in this chapter. The earliest alphabetic inscription found on Cyprus was discovered on a bronze obelos (spit) in Tomb 49 at Palaepaphos-*Skales*, interestingly on the west coast of the island, whose contents date to the late-11th- early-10th centuries BC (S. Sherratt, 2003b). As Susan Sherratt points out (*ibid.*), this is an inscription written in the Greek language, using a Cypriot writing system that was still being used to write other languages in use on Cyprus at this time. She further argues that, unlike the situation in Greece, no literacy gap occurs in Cyprus after the end of the LBA. Rather, the issue is one of loss of visibility of literacy, possibly because of the use of perishable materials. This would accord with Papasavvas' (2003a) proposition with respect to the LC IIC- LC III period described earlier.

Unfortunately, as discussed in Chapter 4, Sarepta (and possibly the other cities of the Phoenician coast) also seems to have used perishable materials for writing, not only in the Iron Age, but also during the LBA. Lipinski (2004: xiii) has recently commented on the total lack of documentary evidence written in Phoenician on maritime and land-based trade itineraries. Discussion in the sections that follow is, therefore, confined to archaeological evidence, which will show that Phoenicia continues to engage in maritime trade with Cyprus in the early part of the Iron Age. Its cultural influence also begins to spread south, to sites such as Tell Abu Hawam and Tel Dor, during this period (Gilboa et al., 2003).

Susan Sherratt (2003b) believes that many languages would have been heard and used in Cyprus from the later part of the LBA onwards, possibly various Semitic languages, Anatolian, Greek and Egyptian. Even before the Tyrian colony of Kition was established in the 9th century BC, she believes that at least two centuries of unbroken

contact between Cyprus and Phoenicia would have resulted in Phoenician being understood on the island.

Possible Routes Between the Aegean and the Levant

If Aegeans and Canaanites in Zone L2 had more direct trading relationships with each other during the LBA, what route might they have taken to achieve this? A possibility is illustrated in Map 12. As Monroe (2000: 360) points out, the invention of the keel, most likely by Syro-Palestinians no later than the 15th century BC, was an important advance in technology that facilitated open-sea navigation. The two Late Bronze Age wrecks at Cape Gelidonya and Uluburun are also shown on this map as markers of shipping routes between the Levant and the Aegean that we know dated from this time. The route *from* the Aegean to the Levant may have been more direct, with navigation from Crete to the west coast of Cyprus possible, for example. Manning and Hulin present a map (2005: 276, Figure 11.1) that shows the areas of the Eastern Mediterranean sea from which landmasses are visible. Their analysis shows that a ship leaving Byblos on the coast of modern Lebanon for Cyprus would see its destination landmass before losing sight of its coast of origin. This would not be the case for a ship departing from Ashdod or Ashkelon on the lower relief coastline of the southernmost Levant (Zone L4), for example. Bikai (1987a) has suggested that a Phoenician ship heading towards Rhodes or Crete in the Iron Age could well have made landfall on the west coast of Cyprus. As evidence of this, she cites the presence of the earliest Iron Age Phoenician ceramics in this part of Cyprus, and not in any other. This is discussed at greater length later in this chapter.

Map 12 shows this hypothetical trading vessel making Cypriot landfall on the west coast – perhaps around Palaepaphos, where several hundred Mycenaean ceramic finds have been excavated (Maier and Karageorghis, 1984: 55). It then might call in at Kition or Hala Sultan Tekke before reaching Enkomi. Alternatively, the Mycenaean goods might be landed at this first Cypriot port and re-loaded on to a Cypriot ship to continue their voyage to other Cypriot or Levantine ports. The lack of reference to Aegean traders in the texts of Ugarit, together with the Cypro-Minoan marks on some Mycenaean vessels found there might then argue for a Cypriot ship transporting the Mycenaean trade goods to Ugarit from, say, Enkomi and coming back with, among other things, tin for the bronze industry there.

Looking at Map 12 again, whereas Ugarit and Zone L1 are hidden *behind* Cyprus from the Aegean perspective, Sarepta and Zone L2 lie straight ahead, with the same distance to sail as from Cape Gelidonya to the west coast of Cyprus.

Cypriot Regionalism and Long-Distance Trade

In Chapter 3, when discussing imports of Mycenaean wares into Cyprus, I refrained from subdividing the island of Cyprus into regions on the basis that it is a relatively small geographic area where access to the interior from the coast would not present significant issues either for local or international merchants if they were minded to trade there. The choice of Enkomi as a site to review in detail in Chapter 3 was made not only because of the quality of its excavation publications but also for its proximity to and affinity with Ugarit. Chapter 3, therefore, did not assess whether different parts of the island might have had different international trading relationships during the LBA. As Manning and De Mita (1997: 115) point out:

"Future research on Cyprus and other islands focused on such regional differences in the archaeological evidence for external economic relations holds the potential to resolve some of the current difficulties in describing long-distance trade in the east Mediterranean during the LBA."

Unfortunately, such approaches have not yet appeared in the literature. Whether there were regional differences in Cyprus' LBA trading relations with the Levant and what degree of continuity existed in such relations across the LBA/Iron Age transition has not been addressed.

With Ugarit off the scene, it emerges from this work that the prime locus of continuing international trade in which Cyprus participates in the earliest part of the Iron Age is that with Zone L2 of the Levant, which can now legitimately be called Phoenicia. As already mentioned, having escaped the region-wide devastation at the close of the LBA, Tyre, Sidon and Sarepta are free to assume the mantle of pre-eminence among Levantine international trading ports after Ugarit's demise. Susan Sherratt has recently pointed out that the Phoenician cities would have been more or less free of Egyptian interference in their affairs after the death of Ramesses II (S. Sherratt, 2003a). They had consequently been able to function independently for *"some decades"* before the beginning of the 12th century BC (*ibid.*: 50) and were in a good position to flourish in the face of the adverse conditions faced by Levantine coastal areas both north and south

of them. Metalworking and other industries (such as pottery manufacture and textile dying) continue at Sarepta in the strata that bridge the transition between the LBA and the Iron Age (Strata G-F of Area II, Y – see Table 8) (*ibid.*). It would seem logical, therefore, that maritime trade from the undamaged Phoenician ports would have also continued at some level across this period despite the likely hazards at sea as a consequence of the destructive actions of invaders to the north and south of them. Susan Sherratt (*ibid.*) cites the presence of several Mycenaean IIIC bowls from Cyprus (or elsewhere on the Levant coast) as evidence of this.

Unfortunately, the analysis that follows is confined to ceramics as not enough material is available from Levantine contexts to work meaningfully with diagnostic metal artefacts, for example the early iron objects from Cyprus documented by Susan Sherratt (1994). The ceramic evidence of Phoenician trade with Cyprus will be reviewed with the aim of identifying regional differences within Cyprus in the earliest part of the Iron Age. In IA I also, Phoenician ceramic influences begin to appear in sites in northern Israel (in the northern part of Zone L3), such as Tell Abu Hawam and Tel Dor (Gilboa et al., 2003). The archaeological record of these sites, in contrast, has produced very few contemporary Philistine wares (from Zone L4 in southern Israel) (*ibid.*).

There is an issue in treating Cyprus as a unity when considering long-distance trade. Inland geography is an impediment to communication within the island, even today (Steel, in press) and would certainly have been an obstacle to overcome if LBA Cyprus were a unified political and economic entity. This point is also well made by Held (1993), who also discusses geographic reasons for the relatively late arrival of Cyprus as a regular participant in Eastern Mediterranean trading circuits. As Steel (in press) points out, models portraying a unified political structure of the island during the LBA have been put forward by many commentators (e.g. Muhly, 1972 and Knapp, 1985) predicated on historical sources. Much has also been written about whether the Alashiya attested in MBA and LBA texts was an island-wide kingdom at this time or not (e.g. Hellbing, 1979; Georgiou, 1979; Merrillees, 1992) or whether Alashiya was in fact Enkomi (see Merrillees, 1992 for discussion and references).

The equation of Alashiya with Enkomi emerged as early as 1952 in Dussaud's contribution to Schaeffer's first Enkomi-Alasia volume (Schaeffer, 1952). Goren et al. (2003) have provided a degree of closure on this subject, as already discussed in

Chapter 4. Petrographic analysis of some of the 14th century BC correspondence from Alashiya to Egypt and Ugarit indicates that the most likely clay source comes from the region of Kalavasos and Alassa in the south of the island. Interestingly, and in contrast, the tests carried out on the Enkomi Cypro-Minoan tablets in the same study point to a source of clay located close to Enkomi (*ibid.*).

Iacovou (2003) recently presented her perspective of the LBA political structure of Cyprus at a Mycenaean Seminar in London. She contends that no island-wide administrative system existed during the LBA and that the ten Iron Age regional monarchies that are attested from texts (the Esarhaddon Prism of 673/2 BC (Snodgrass, 1994)) mirror the decentralisation in the island during the LBA. As Snodgrass (*ibid.*) points out, we may not be able to read Cypro-Minoan documents but we know that they were not the administrative records of a centralised bureaucracy. This is certainly supported by the evidence from Enkomi of bronze working in many parts of the site, often on a household level, referred to already in Chapter 4, and the lack of buildings that can be identified as palaces. For the purposes of this analysis, therefore, I will follow Monroe's advice (2000: 302) that

" ... it would be wiser not to assume that a central authority controlled the island's production and exchange. Regional princes or princesses and individual households appear to have been capable of independent manufacture and exchange."

As Steel (in press) points out, whether the island was politically unified or not during the LBA, it certainly underwent a dramatic change, with the advent of large urban centres on the south coast indicating the rise of a more complex society. This would have had profound ramifications for its pottery industry and for intra-island trading relationships. Measuring the degree of homogeneity in this industry or whether a degree of regionalism persists could be a useful diagnostic for trade relationships during this period and starting point for addressing the questions being asked here.

Literature that discusses regionalism within Cyprus does exist (e.g. Bolger, 1989, Keswani, 1996 and Knapp, 1997), usually accompanying the results of archaeological survey work. An up to date and comprehensive review of the subject either in the case of regional trends in LBA ceramic manufacture or for the copper and bronze industry does not exist, however. Bolger usefully cautions on the need to understand the landscape and to look for variation, even within areas that are circumscribed by natural

barriers. Keswani's work has focused primarily on settlement patterns to distinguish between different forms of urbanisation (site hierarchies) and degrees of social complexity on the island. Knapp characterises much of what has been done to date in the quest for a better understanding of the relationships between the polities of LBA Cyprus as not being holistic enough and being too dependent on ceramics (Knapp, 1997: 46). Nevertheless, when trade is the prime focus, I contend that this is one of the better places to start, given the ubiquity of the LBA Cypriot ceramic archaeological record both at home and abroad. The discussion that follows will, therefore, explore some regional variations in the ceramic record of Cyprus across the LBA/Iron Age transition to see whether they are informative in corroborating specific trading relationships with overseas trading partners and whether such relationships endure across that transition.

Manning and De Mita (1997) advocate the need for more systematic archaeological survey programmes to achieve better resolution on the question of regional variation. Diacoupoulos (2004) summarises the particular history of archaeological survey programmes in Cyprus, referring to Hector Catling's pioneering work between 1955 and 1959 (Catling, 1962) as the foundation on which later work has been built. She identifies three factors as the drivers behind recent research (in addition to the question of island-wide versus local hegemony issues already mentioned), namely seeking to resolve chronological issues, investigating the importance of foreign elements in the population (migration or invasion events) and assessing the relative importance of religious and political factors within Cypriot society. The way the island's inhabitants interacted within the broader Eastern Mediterranean trade networks, and any distinctive patterns within this in different parts of the island, has not, unfortunately, been a focus of enquiry. Nor has the diachronic dimension of how these relationships may have evolved been explicitly sought out, either during the LBA or across the LBA/Iron Age transition.

Blanton (2001) has critiqued the approaches taken to survey programmes in the Mediterranean region in ways that are highly relevant to the questions being tackled in this thesis. He criticises the trend towards intensive survey methods as militating against good regional analysis due to the necessarily limited scale of such endeavours. Blanton contrasts this with approaches taken in Mesoamerican projects in the Valley of Mexico

and Oaxaca, where archaeologists have been able to use extensive survey methods to study large scales of human interaction (and the social, cultural and demographic processes that lie behind them). Only after such large-scale study has produced working hypotheses about the nature of these interactions does small-scale, detailed exploration begin. Blanton believes that if small-scale, intensive survey precedes the large-scale hypothesis-generating phase, little beyond comparative ceramic densities of neighbouring settlements will be produced thereby, perhaps unintentionally, relegating questions on socio-cultural evolution to the sidelines. In broad agreement with Blanton's position, I have therefore decided to pull back from the level of detail being generated by intensive surveys in recent years, and concentrate on the excavated archaeological record in order to address the regional scale questions being asked here.

A Brief History of LBA Ceramic Regionalism in Cyprus

Merrillees' 1971 paper on the early history of Late Cypriot Bronze Age ceramics (LC I wares) identified differences between the west and east of the island. The ceramic repertoire revealed likely differences in their trading relationships. This work was based on the archaeological record, and made no assumptions about the way the island was governed. It concentrated both on regionalism within the indigenous ceramic repertoire and on imports from the Levant and Egypt found in representative sites in different parts of the island. He states that the trade in Cypriot ceramics with Syro-Palestine and Egypt became meaningful in scale in MC III and that this trade was largely monopolised by the eastern part of Cyprus until the end of LC IA (*ibid.*: 77). Interestingly, Merrillees cites evidence of tensions between the east and west of the island at this time (the evidence for which being fortified structures) and speculates that this could have come about as a result of the east's stranglehold on the lucrative trade with the Levant and Egypt and the west's wish for a share thereof.

The first Mycenaean wares to arrive on Cyprus appear in the west of the island, with one of the earliest examples being a 15th century BC LM IA cup found at Palaepaphos (Maier and Karageorghis, 1984: 71; Van Wijngaarden, 2002: 186). Mycenaean wares appear in quantity on the island first in LC IB and this trade grows in scale in LC II (evidenced by increasing quantities of LH IIB and LH IIIA wares) (Georgiou, 1979; Van Wijngaarden, 2002: Catalogue 1). Perhaps this growing interaction with the Aegean gave western Cyprus the opportunity to participate in a higher level of contact

with the rest of the island, given its geographic position in relation to maritime routes as a possible first landfall. It may also have assisted in helping the west of Cyprus to interject itself into the lucrative trade with the Levant (which the eastern part of the island had been engaged in for some time).

The homogenisation of the Cypriot ceramic record during LC II supports the idea of greater trade and/or exchange of ideas between the east and west of the island. Nevertheless, as Herscher (1984: 27) points out, subtle regional distinctions can still be detected. Steel's forthcoming paper (in press) identifies the issues that need to be included in such discussion and highlights certain indicators of regional styles of production within the various ceramic wares of LBA Cyprus. For example, she points out that Cypriot Monochrome wares come from a western Cypriot tradition that continues from the MBA and that White Shaved wares are common at Enkomi and Athienou, but not elsewhere on the island (*ibid.*). Unfortunately, my analysis suggests that the degree of homogeneity of the LBA Cypriot ceramic record island-wide is such that quantifying different types of Cypriot finewares in archaeological contexts in the Levant will reveal little about their point of origin in Cyprus. A brief review of the quantities of White Shaved wares (possibly diagnostic of Enkomi, and the east of Cyprus) compared with Monochrome wares (more prevalent in western Cyprus) from the recently published ceramic repertoire of the *Maison au sud du temple aux rhytons* in the Centre de la ville area of Ugarit (Yon and Arnaud, 2002) reveals similar quantities of the two types (seven of each) which, in any case, are dwarfed by six times as many White Slip milk bowls that are common all over the island. Clay analysis may be used to gain better precision on where these wares were made, but this is not widely enough available in the Levant or Cyprus to pursue this question. It would also seem reasonable that Ugarit, as such a major maritime centre located close to the island, would have had access to the full range of LBA Cypriot fine wares – both containers and dinnerware – sourced from all over the island.

Imports to Cyprus from the Levant

I believe that analysis of ceramic imports across the LBA/Iron Age transition in the Eastern Mediterranean may hold the key to better resolution of how relationships realigned after the widespread destruction of sites that happened in the period immediately after 1200 BC. Manning and De Mita (1997: 115) have identified the

potential of Cypriot ceramic imports to resolve how different parts of the island interacted within the Eastern Mediterranean world-system:

"... analysis of the distribution of imported artefacts, where clearly distinguishable from locally manufactured imitations, holds the potential to reveal the relative degree and extent of foreign interaction across the different regions. It is this latter analysis which may point the way toward a richer understanding of the nature of Mediterranean trade and the operative forces behind its implementation."

Turning to metals, the evidence presented in Chapter 4 would lead us to suppose that after the destruction of Ugarit and Emar, tin ceases to be a major export from the northern Levantine coast to Cyprus. A continuation of trade with Cyprus would, thus, depend on other goods which may have already been traded during the LBA, or which may have represented new arrivals on the scene in IA I. A possible marker for Levantine exports to Cyprus, at least one that we stand a chance of being able to identify in the archaeological record, would be Canaanite jars (which had probably been used to transport wine or some other agricultural or organic product). Their distribution in Cyprus is discussed in this chapter, as well as the first appearance of IA I Phoenician wares on the island.

Exports from Cyprus to the Levant

As already discussed, Cyprus had long exported ceramics to the Levant. The continuity, or otherwise, of the appearance of Cypriot ceramics in the archaeological record of the four Levantine zones across the LBA/Iron Age transition is considered in this chapter. In addition to the sequence at Sarepta, his discussion will incorporate newly published evidence from Tel Dor in Zone L3, which becomes part of the Phoenician cultural sphere during the Iron Age, as well as data from the excavations of the cemetery of Tyre-Al Bass (Zone L2).

Reference must be made here to ceramics of Mycenaean style made in Cyprus during this transitional period, as the subject of the ware contemporaneous with LH IIIC in the mainland is fraught with difficulties. In Cyprus, this ware is variously referred to as Mycenaean IIIC or White Painted Wheelmade III (with Levantine comparanda referred to as Mycenaean IIIC, Mycenaean IIIC: 1, Mycenaean IIIC: 1b and Philistine Monochrome). The first major difficulty is that excavation reports of different vintages are not consistent with each other in terminology or attribution. Secondly, older reports naturally do not reflect recent refinements in the sequence in the Argolid. We must

await the results of Mountjoy's comprehensive review of this subject (E. French, personal communication, September 2004), as well as the work of the SCIEM project (Deger-Jalkotzy and Zavadil, 2003). To draw inferences now about either regional differences within Cyprus or the distribution of this ware abroad would be premature.

Nevertheless, the Mycenaean IIIC wares found at Ekron and Ashdod date have close parallels in Cyprus. They date to the LH IIIC Early and Middle Phases (see Table 3) and parallel finds from Enkomi, Sinda, Maa-*Palaeokastro* and Kition in LC IIIA contexts (Dothan and Zuckerman, 2004). The repertoire in Philistia is more limited than in Cyprus but both have a high proportion of dinnerware (*ibid.*). Dothan and Zuckerman (*ibid.*) conclude that these wares were locally made in Philistia for a population accustomed to specific culinary practices not characteristic of the LBA Levant. The picture revealed in Stager's recent excavations of the LBA/Iron Age transition at Ashkelon is also similar (Stager, 2004). They see the data as being inconsistent with the views of Susan Sherratt (1998) and Bauer (1998) who have suggested that locally produced Mycenaean IIIC may represent an import substitution phenomenon.

It is interesting that the analysis in Chapter 3 of Mycenaean wares from sites in the Levant and Cyprus prior to the LH IIIC period shows a high proportion of dinnerware at Enkomi (see Figure 12, which shows the comparative concentrations of LH II – LH IIIB wares from comparable domestic contexts broken down by their function). Although dinnerware made up more of the total assemblage at Ashdod than at any other Levantine site examined, it nevertheless made up only just over one third of the assemblage, compared with over two thirds at Enkomi. In addition, whereas Aegean-influenced wares dominate the fineware assemblage at Ashdod in the IA I, earlier imported Mycenaean wares made up only a small fraction of the total assemblage.

Within the Levant, aside from sites that have produced locally made LH IIIC (principally those in Philistia) *'imported'* LH IIIC has been found at Ras Ibn Hani, Sarepta, Tyre, Akko, Tel Keisan and Beth Shean (Warren and Hankey, 1989: 162-5; D'Agata et al., 2004). Provenience work on the samples from Israel is discussed later in the chapter but, unfortunately, no petrography or NAA has been done on the abundant sample from Sarepta. Warren and Hankey (1989: 163) summarise Koehl's remarks in *Sarepta III* on the likely origin of the Sarepta LH IIIC material:

"Koehl in a perceptive study... notes that this is imported material, not locally made, of the early phase. One fragment probably belongs to the derivatives of the later Granary Class as it developed in Cyprus."

Koehl (1985: 146) states that there is no evidence on the Phoenician coast for "Mycenaean" settlements, which he contrasts with the evidence from Cyprus. He goes on to say that the discovery of Mycenaean style pottery in 12th century BC contexts might be explained by continued contacts between *"... Cypro/Mycenaeans and Phoenicians"* (*ibid.*: 147) or alternatively by Phoenician merchants seeking out pottery in the Mycenaean style that had previously come from the Argolid from production centres in Cyprus. Koehl (*ibid.*) also suggests that these wares in Mycenaean style may have been imported in preference to other LC III wares.

Continuity Across the LBA/Iron Age Transition

The degree of continuity of trade between Phoenicia and the west coast of Cyprus, specifically in IA I, is explored in the sections that follow.

Evidence from Western Cyprus

As already mentioned in Chapter 4, relatively few settlements have been excavated on the western coast of Cyprus. This is the area where one might expect LBA shipping from the Aegean to make landfall to pick up water and other supplies if on a longer journey to the Levantine coast or, as discussed earlier in this chapter, to main Cypriot urban centres on the south and east coasts such as Hala Sultan Tekke, Kition or Enkomi. The characteristics one would look for in such a way-station would be a sheltered anchorage or harbour, good fresh water supplies and, potentially, an easy position to defend not too close to a major Cypriot settlement. Examples of such locations in the Mediterranean from other time periods would be the island/peninsula sites of Motya in Sicily, Cap Bon in Tunisia and Pithekoussai off the west coast of Italy. In addition, the LBA (14th-13th century BC) settlement at Bates's Island near Marsa Matruh on the coast of the Western desert of Egypt may be considered to be a trading post and a supply station (White, 2003). This site is located, essentially, on an island in the desert. About 80% of the pottery sherds found there are Cypriot, with the remainder being Egyptian, Canaanite and Aegean (Hulin, 2003). Crucible fragments, bronze scrap and slag have also been found there, suggesting that metalworking also took place (White, 1986).

A way-station might begin life as a seasonal stop-off point, without the establishment of a permanent settlement, but if the level of traffic warranted it, and opportunities for a more local trade arose, a permanent establishment with a different architectural and material culture signature from that of the indigenous culture might well develop.

Maa-Palaeokastro

Among the sites reviewed in the published archaeological record, Maa-*Palaeokastro* stands out as one that matches the characteristics described above for a hypothetical way-station/trading post. The metal working activities of this fortified settlement were discussed in Chapter 4. It is located 10 km north of modern Paphos on the west coast of Cyprus and stands on a rocky peninsula between two natural harbours with fortifications defending it on the landward side (see Map 13). Dikaios was the first to excavate the site in 1954 (Karageorghis and Demas, 1988: 1) and he concluded that it was a one period site belonging to the LC IIIA (in which locally made LH IIIC: 1 – referred to as Mycenaean IIIC – is the predominant pottery style at Enkomi). Karageorghis' excavations between 1979 and 1986 demonstrated conclusively that the occupation dated further back into the LH IIIB period of Mycenaean pottery, or LC IIC (Karageorghis and Demas, 1988: 2).

The material culture of Maa is interesting on two counts. First, although it retains a strong local Cypriot flavour, Maa does exhibit many Aegean cultural manifestations. Second, it has also produced an unusually high number of Canaanite amphorae, attesting an intense relationship with the Levant during the LBA. Yasur-Landau (2003) has recently commented on the predominantly Aegean material culture of this site, including hearth rooms, LH IIIB wares and locally made LH IIIC fineware, loom weights and cooking jugs. Karageorghis and Demas (1988: 263) add violin shaped fibulae and handmade burnished ware to this list. These come from three excavated building phases: two from LC IIIA (Floors I and IA) with the earliest floor (Floor II) dating to LC IIC (based on the presence of LC IIC Cypriot wares). The Floor II settlement was violently destroyed and rebuilt. A problem arose during these excavations, as the discoveries did not fit into the Cypriot ceramic chronology established by Dikaios based on Enkomi. The issue was that LH IIIC pottery was recovered from *all* of the stratigraphic layers at Maa, including the earliest period – Floor II (Karageorghis and Demas, 1988: 3). Neat explanations of destruction by

Aegean elements/colonists coinciding with the end of LH IIIB followed by rebuilding and the advent of LH IIIC pottery and ashlar buildings put forward by Dikaios, therefore, did not work for the stratigraphy of Maa (S. Sherratt, 1991). Karageorghis and Demas (1988: 257) point out that correlating destructions or abandonments island-wide in Cyprus based on this evidence is a problem and that different parts of the island may have been affected at different times. As Karageorghis and Demas so vividly put it (*ibid.*: 259):

"In Syria and Palestine, Mycenaean IIIC seems to represent the aftermath of things done, while in Cyprus it may be the harbinger (in LC IIC) of things to come (in LC IIIA)."

The Mycenaean IIIC pottery at Maa-*Palaeokastro* is probably among the earliest in Cyprus (*ibid.*: 261). One of the features of the Mycenaean IIIC:1 repertoire at Maa is a large number of skyphoi (drinking cups). These are decorated with monochrome paint on the interior with an occasional reserved band below the rim (Kling, 1988: 334). Such vessels are also known at Palaepaphos but not in the eastern Cypriot sites, and comparanda also exist at Tarsus in Cilicia (*ibid.*: 326). According to Kling, French has ascribed monochrome interiors to the earliest phase of LH IIIC at Mycenae. Kling also states that Mountjoy puts the development of the reserved band in LH IIIC Middle (*ibid.*: 326-327). Overall, in the Floor II settlement, Mycenaean IIIC represents between 30-50% of the fine-ware sherds (a number comparable with that at Enkomi – see Table 10 and Table 11 in Chapter 3), rising to 50-70% on the two floors of the later settlement. (Karageorghis and Demas, 1988: 260). Given the comments made earlier in this chapter about the need to await comprehensive reappraisal of the Mycenaean IIIC wares of Cyprus, they are mentioned here simply to demonstrate that people who were either from an Aegean cultural background or, at the very least, highly influenced by Aegean cultural preferences, manufactured them at Maa. Taken together with the other evidence, including cooking jugs, the balance of probability must be in favour of some Aegeans living at this short-lived settlement.

Turning to evidence of strong Levantine contact, it is clear that the large number of Canaanite jars found in LC IIC and LC IIIA contexts at Maa is diagnostic of regular trade with the Levant (Hadjicosti, 1988: 360) that continues across the LBA/Iron Age transition. The finds represent at least 84 jars (based on over 5000 sherds recovered) were found, the majority of which date to LC IIIA (Floor I). Hadjicosti states that these

do not form a large variety of types, which rather suggests trade with a limited number of Levantine production centres (*ibid.*: 359). She raises the possibility that Maa may have served as a distribution centre for these jars and/or their contents. This hypothesis is based on the disproportionately large number found there, which suggests a direct link with Levantine ports (*ibid.*: 361). Chemical and petrographic studies on these jars (Jones and Vaughan, 1988) prove that they mostly hail from the central Levant and southern Palestine (rather than being locally made). Unfortunately, the Canaanite material at Enkomi remains largely unpublished (Hadjicosti, 1988: 361) and therefore no comparisons can be made between it and Maa.

Barako (2000) makes the point that the absence of imports from Cyprus in Philistia, and the relative proximity of, for example, Tyre and Sarepta to Cyprus makes it likely that the Canaanite imports to Cyprus during the LC IIIA period came from the major Phoenician centres of the northern Levantine coast, rather than Philistia. Susan Sherratt (2003b), however disagrees with this notion of a lack of contact between Philistia and Cyprus, as the development of Philistine Monochrome Mycenaean IIIC wares in IA I strata at Ekron and Ashdod mirrors that at Enkomi – at least for the first half of the 12th century BC. Dothan and Zuckerman (2004) agree that Cyprus, Philistia and the Aegean maintained contact during the first half of the 12th century BC. They also believe that Cilicia played a significant role in mediating cultural interconnections. However, they argue that Philistine potters making Mycenaean IIIC wares kept up to date with developments elsewhere as a result of large-scale population movements, rather than through trade (*ibid.*). Killebrew (2003) has suggested that the large-scale migration of Philistines to the coastal plain of southern Israel may have originated from Cyprus (with Cilician input) rather than the Aegean.

An aside must be made about Cilicia at this point, which is relatively unexplored compared with the Levant and Cyprus. This area lies at the northeastern corner of the Mediterranean, south of the Taurus Mountains in modern Turkey. The Amanus Mountains separate it from the Amuq plain and French divides the ceramics of Aegean type from this region into two types (French, in press b). The first is true Helladic ware, which is most numerous in the LH IIIA period but with one possible example dating to the earlier LH IIA style. It is possible that Cilicia or the northern coast of Cyprus marked a stage in the route through which early Mycenaean ceramic imports reached

Alalakh. This site has yielded plentiful examples of LH IIIA wares (and also LH IIA and LH IIB wares) (Koehl, 2004). French terms the second type Hellado-Cilician ware, which belongs to the 12th century BC and is not an Aegean import (French, in press b).

The quantities of Aegean imports arriving in Cilicia during the time of the Hittite Empire are extremely low (*ibid.*), and consistent with the picture for the Hittite heartland as a whole. After the fall of Hattusa, Cilicia appears to have been part of a Cypriot maritime circuit (S. Sherratt, 2003a) and Hellado-Cilician wares become more common at sites such as Tarsus and Kazanli (French, in press b). As French (*ibid.*) points out, it is not known definitively yet whether these are locally made or imports from a non-Aegean source, of which Cyprus must be a strong possibility.

Returning to Maa-*Palaeokastro*, another interesting feature is the corpus of balance weights found there, namely 37 weights dating to the LC IIC period (Courtois, 1988). Balance weights are integral to mercantile trade, both within a culture and between individuals from different cultures (Petruso, 1984). Courtois (1988) remarks that the excavations at Maa yielded a good number of weights for a small, fortified site of brief duration. This would support the view that this site was heavily engaged in commerce, as weights may be regarded as the most important tool in a merchant's assemblage (Hafford, 2001: 156). Courtois (1988) also comments that, despite the vast extent of the excavations at Enkomi, Maa yielded far more 1 mina weights (equivalent to 1/60th of a talent – approximately 470 g (Monroe, 2000: 57)). Another feature of the Maa weight repertoire is that it contains a relatively high number of weights (six in total) that have correspondence with Aegean weight systems, even if the majority (21 weights) correspond with Syro-Egyptian standards. Meanwhile, five weights appear to have been based on a local Cypriote measure, known at both Enkomi and Kalavassos. As Petruso (1984: 295) has remarked, the presence of several weight systems in a single site may represent a *"rough index"* of how cosmopolitan it is.

This contrasts strongly with the situation at Pyla-*Kokkinokremos* on the southeast coast of the island, which Karageorghis also excavated at about the same time (Karageorghis, 1984). Twenty one weights were found at Pyla (another fortified site in a strategic position overlooking the coast) in LC IIC contexts (Courtois, 1984). Here, the weight system is characterised by a wide range of weight denominations (namely from half a sickle to a talent) within one system, namely the Syro-Egyptian one (*ibid.*). According

to Courtois, as well as conforming to the Syro-Egyptian system, one weight may also correspond to a Minoan talent (no. 77), while one other may represent 4/3 of an Aegean mina (or 1.333 of an Aegean Mina – which would be an unusual conversion, for sure).

Consequently, while the weights of Pyla appear to conform to eastern metrology, a significant number at Maa additionally conform to Aegean standards. One would expect this if the site had functioned as a way-station on the maritime route from the Aegean to the Levant.

Palaepaphos-*Skales*

The excavation of this part of the Palaepaphos site, which lies about 26 km south of Maa-*Palaeokastro*, came about as a rescue excavation after modern activity to level some ground for agricultural use resulted in a number of tombs being exposed in 1979 (Karageorghis, 1983: 1). Excavations revealed tombs of the Iron Age Cypro-Geometric period, of which the majority were chamber tombs. This discussion will focus on imports from the east in these tombs, for which Bikai (the excavator of Tyre) produced the analysis contained in the excavation report (Bikai, 1983).

Bikai's report commences with a discussion of the most easily identified class of ceramic artefact found, namely what she terms (*ibid.*: 396).

"... the Iron Age version of the Canaanite storage jar."

Twelve of these were found in the tombs, which represented two types. The first type (of which there were ten examples) is described as being probably from IA I contexts based on comparanda from Bikai's own site of Tyre, which she excavated in the early 1970s (Bikai, 1978). According to her, (1983: 396), they are also known at the Phoenician site of Tel Keisan in northern Israel. This type of vessel continues until the 8th century BC, and its ascription here to the early part of the Iron Age is due to the other items contained in the tombs, including the second group of Canaanite jars.

Two examples were found of the second type, and are more useful in determining precise trade connections. This type is characterised by flat shoulders and a triangular body and is heavy with thick walls. Bikai (1983: 396) notes that it would be interesting to know whether they were made heavy because of a specific commodity they

contained. Here the parallels are very specific, namely one from each of Tyre and Sarepta (see Plate 9).

Only two intact examples are known that are comparable to these jars. The first was found in Stratum XIII at Tyre (Bikai, 1978: Plate XXXV: 2) dating to immediately after 1070/50 BC (*ibid.*: 66) and the second at Sarepta (Pritchard, 1975: Figure 24: 6) from an earlier context. At Sarepta, this type is known as a Type 18 Storage Jar. The intact example was found in square II-B-8, on the floor of a working area next to a kiln (Kiln G) in a part of the site that was a pottery manufacturing area. It was found in Stratum V (Khalifeh, 1988: 27; Pritchard, 1978: 120) in the area that provided the most undisturbed stratigraphy of Area II, X. Bikai states that Pritchard tentatively dated this find to 1200 BC.

Bikai (1983: 396) stresses the point that these Phoenician parallels from Tyre and Sarepta are so strong:

"... they must be products of the same workshop."

Overall, Bikai concludes that the imports of Palaepaphos-*Skales*, which also include later Phoenician wares that are not discussed further here, are important because of the light they shed on Levantine – Cypriot relations in IA I. Bikai states (*ibid.*: 404):

"...it is a surprise to find such a large group of imports on the Western end of Cyprus; early pieces have appeared sporadically, particularly at Amathus, but there has been nothing to compare with this."

She also stresses the importance of this assemblage at the time of its excavation because of the relatively few groups of known IA I Phoenician pottery, a fact that has only recently begun to change with the publication of Tel Dor and the cemetery of Tyre-Al Bass (see below). This part of the Palaepaphos-*Skales* excavation report documents later wares that have parallels in what Bikai describes as the post-Philistine period in the southern Levant, indicating a resumption of contact with this part of the Levant (my Zone L4) later in the Iron Age (*ibid.*).

Karageorghis concludes (1983: 371) that the twelve Canaanite amphorae found together with other Levantine ceramics represent an unprecedented find compared with other early Cypro-Geometric sites on the island. He rationalises this as either being the result of Palaepaphos being the most important trading centre on the island in CGI – CGII

(and, therefore, it was natural that the Phoenicians should trade there) or that the Phoenicians had started their westward expansion earlier than previously thought and used Palaepaphos as their trading base (as they did at Kition later in the Iron Age).

I would argue in favour of a third alternative. This evidence also supports the notion that contact between Phoenicia and the western part of Cyprus did not stop across the period of the Levantine LBA/Iron Age transition. The nature of the trade may have changed, but sites in both western Cyprus and Phoenicia (Zone L2) were not destroyed at this time and appear to have carried on trading with each other.

Since the original excavation report was published, work has carried on at Palaepaphos under the direction of Maier. To Bikai's (1987b) original list of 69 Phoenician imports in the tombs (from all periods) at least six more can be added (Maier, 1999). Maier underlines the unique position of Palaepaphos within the Cypriot archaeological record as being remarkable for the continuity of this site from the LC III into CG I period, being neither destroyed, abandoned nor transferred to another site (*ibid.*). He stresses that, although the majority of grave goods found there are Cypriot, no Greek (Aegean) imports occur in the graves that date to 1050 – 850 BC (*ibid.*; Coldstream, 1990). In contrast, imports from Phoenicia were conspicuous from the earliest part of this period (Maier, 1999). Consequently, this city that had looked west as well as east during the LBA seems to have acquired only Phoenician ceramic imports during this period. More excavation may change this perspective, but until it does, this is a valid working hypothesis.

In the rest of the island, evidence is scarce from this early period. As Bikai (1987a) has pointed out, there is no archaeological evidence that the Larnaca area (which includes Kition) was important to the Phoenicians in IA I. At Kition, which became a Phoenician colony in the 9th century BC, there is a marked decline after the end of the LBA (Yon, 1999), although the settlement is neither abandoned nor does it move location (Iacovou, 2004). Bikai (1981: 29) remarks that the first thing that can be said about imported pottery in Kition Area II is that there is *"surprisingly"* little of it. She goes on to say that very few classes of Levantine pottery are found there and, what there is, is much later (corresponding to Tyre Stratum X – c. 850 BC (Nunez, 2004: 286)).

Evidence from Phoenicia

Recent work on Phoenician sites, particularly that of Gilboa and Sharon (2003), has sought to shed light on the chronology of the earliest part of the Levantine Iron Age and, by inference, that of the Eastern Mediterranean region by linking new data on ceramic seriation to those from radiocarbon dating. Phoenicia is a good place to carry out this work not only because it survives the end-LBA destructions and continues to trade regionally but also because stratified deposits of ceramics have become available in recent excavations such as those at Tel Dor. This site has produced one of the most plentiful sequences of Cypro-Geometric pottery outside Cyprus (Gilboa, 1999), with the possible exception of Bikai's limited sounding at Tyre (Bikai, 1978). Figure 16 shows the relationship between the Phoenician sequences to Cyprus and Greece. Unfortunately, Stratum XIV at Tyre is far too long and undifferentiated to be used to resolve issues of continuity across the LBA/IA transition and Gilboa and Sharon (2003: 44) have raised issues about the recording of this sequence. Consequently, we have to look to the Sarepta sequence for this period in the examination of continuity of or trading relationships with Cyprus.

Sarepta

The LBA/Iron Age transition at Sarepta is that between Stratum G and Stratum F in Area II, Y and between Stratum V and Stratum VI in Area II, X and is dated to 1200-1190 BC by the excavators (Anderson, 1988: 422-423). This site remains the best guide to the ceramic assemblage of the earliest part of IA I in the Phoenician heartland. As has been repeatedly mentioned, there is no end-LBA destruction horizon in this sequence, and the ceramics of local character have absolute continuity with the last strata of the LBA (and might, therefore, be termed LB III (Gilboa and Sharon, 2003: 55, Table 11)).

Cypriot ceramic imports continue in Strata F and VI and include LCII and LC III wares as well as, in all probability Mycenaean IIIC style deep bowls (Anderson, 1988: 390). Although these strata mark a low ebb in the ceramic imports at Sarepta (Gilboa and Sharon, 2003: 51), there is nevertheless evidence of continuity of contact with Cyprus.

In Area II, Y, a few LC III fragments were found in Substratum G1, Stratum F and Stratum E (see Figure 16) (Anderson, 1988: 267). LC III decorated wares dating to the 12th and early 11th centuries are found in these strata (*ibid.*). In Area II, X (Period VI –

which corresponds to Stratum F in Area II, Y) there were no *"Mycenaean imports"* and only a few from Cyprus (Khalifeh, 1988: 124).

This suggests that Cypriot wares continued to arrive at Sarepta during this period, albeit in modest numbers. Anderson's chronology for Stratum F at Sarepta suggests that it comes to an end in 1150-1125 BC (Anderson, 1988: 422-423). Koehl (1985: 148) notes that, although Sarepta was a participant in the Iron Age trade in ceramics (and their contents), its involvement was on a much smaller scale than neighbouring Tyre. Perhaps this reflects the fact that Sarepta's LBA relationship with Cypriot ceramic suppliers appears to have been less active than that of Tyre, given the marked preference for Mycenaean wares seen at Sarepta during this period.

Tel Dor

Tel Dor is situated on the Carmel coast of Israel (in Zone L2), close to one of the valleys that connected the coast to the Jezreel Valley and about halfway between the heartland of Phoenicia and that of Philistia (Gilboa, 1999). Excavations have been underway since 1990 under the direction of Stern. Area G at the centre of the mound produced a stratified sequence that extends from the LBA (Stratum G/12) to IA IIA (Stratum G/6a). This can be used to correlate sites elsewhere in Israel, the northern Levant and also Cyprus (Gilboa and Sharon, 2003: 10). Area G seems to be an ordinary residential-industrial area in the centre of the settlement.

This part of the Carmel Coast (in Zone L3) is generally associated with *Sea Peoples*. Specifically Dor is mentioned as a Sikila settlement in the Egyptian Wen-Amon Papyrus (Gilboa, 2004). According to Gilboa (*ibid.*), Stern believes that the Sikila and Shardana invaded the Carmel Coast and Akko Plain (see also Dothan, 1986 regarding Shardana at Akko). By the mid-11th century BC, however, the region had become part of a southerly extension of Phoenicia, based on its material culture (Gilboa, 2004).

The IA I ceramic assemblage of the sites in the Akko plain and Carmel Coast in Zone L3 (principally the sites of Tel Dor, Tel Keisan and Akko) may be summarised as follows:

1. Like Sarepta and Tyre, there is continuity in the character of the ceramics between the LBA and earliest parts of the Iron Age.

2. Like Sarepta also there is no evidence here for locally made Mycenaean IIIC wares (Koehl, 1985: 25-26; 146-147). Gilboa (2004) states that the few sherds found at Akko were not locally produced (contra the opinion of Dothan (1989) with respect to this). A recent paper by D'Agata et al. (2004) combines stylistic and scientific (NAA) analysis for a sample of Mycenaean IIIC wares from Zone L3. This paper considers material from Akko, Beth Shean, Megiddo and Tell Dan (in Zone L2) and also notes previous work done on a stirrup jar from Tell Keisan (Balensi, 1981; Gunneweg and Perlman, 1994). The majority of the Beth Shean sherds (15 out of 21) mapped to eastern Cyprus, close to Enkomi while the five samples tested from Akko all matched examples excavated at Palaepaphos in the west of the island (D'Agata et al., 2004). The Tell Keisan stirrup jar also originated in the neighbourhood of Palaepaphos (Gunneweg and Perlman, 1994), The results from Megiddo and Tell Dan were inconclusive and further evidence will be needed to determine whether they were locally made or not. The distinctive Cypriot sources of these groups of ceramics support the idea that different parts of the island had relationships with different Levantine ports.

3. Philistine pottery is rare in this region and confined to small containers presumably brought in for their contents. Ceramic petrography has confirmed them to be from the southern coast of Israel (Gilboa, 2004).

4. Locally made ceramics resembling Cypriot wares of the same period appear. Gilboa (*ibid.*) lists jugs of LC III style at Tel Keisan as well as locally made wavy-band pithoi characteristic of Cyprus. Gilboa goes on to suggest that the makers of such pithoi may have come from some of the settlements on Cyprus that disappeared during LC IIIA (which are listed in Figure 17) and points out that no such pithoi have been found in Philistia.

Tyre-Al Bass

This very recent excavation of a cemetery site has yielded an interesting ceramic assemblage from the IA I levels. Excavations took place between 1997 and 1999 after burial urns appeared as a result of foundations being dug for a factory on the eastern side of modern Tyre (Aubet, 2004: 5). The work done in the 1997 season has recently been published, which encompasses some 50 burial urns and accompanying grave goods.

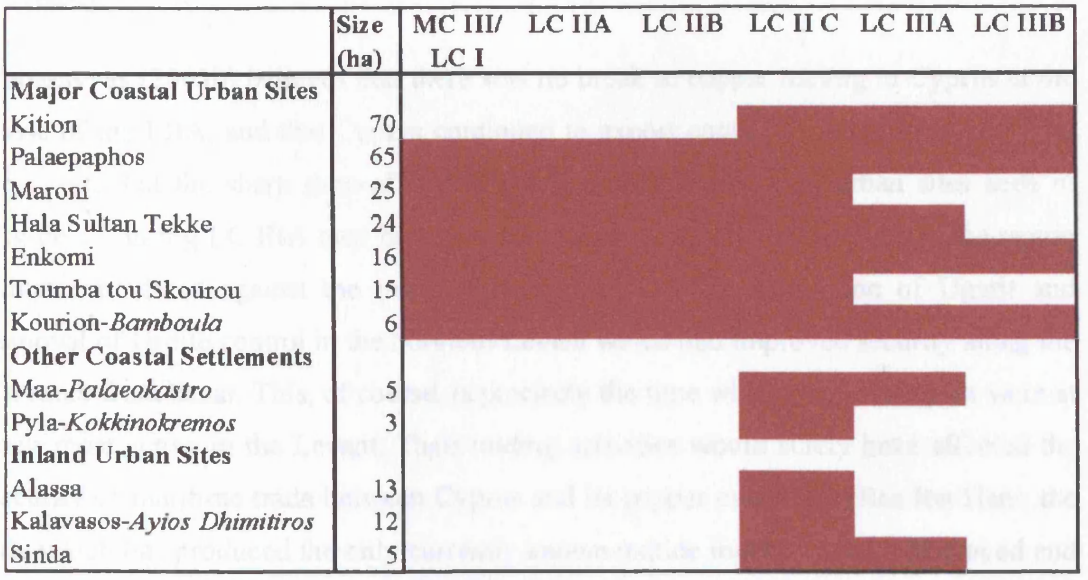
The earliest period (Period I) at this cemetery contains some pottery that could date to the LBA/Iron Age transition, which this report dates to 1200-1030 BC (Nunez, 2004: 352-353). No graves were found from this period (Aubet, 2004: 465) and, unfortunately, therefore, the earliest material lacks context. Among the ceramics of this period is a globular jug, with bichrome concentric decoration on each side of its body and a star motif on the side opposite the handle. Parallels of these are known in earlier Phoenician levels at sites such as Tel Keisan and Tell Abu Hawam but they are also known in the tombs of Palaepaphos-*Skales* (*ibid.*: 352; Bikai, 1983: Figure 2). Nunez (2004: 353) believes that the earliest period in the Tyre-Al Bass cemetery, therefore, coincides with Bikai's Kouklia Horizon (Bikai, 1987b: 58-61; 68 Table 2). This, therefore, is another example of contact between western Cyprus and Zone L2 in IA I.

Copper Demand and Cypriot Site Abandonment

An assumption often made is that Cyprus' copper industry, whose roots lie in the MBA (see Chapter 4), was the principal motor of its economic growth during the LBA. However, based on the oxhide ingot evidence discussed in Chapter 4, the industry only becomes a major producer in the LC IIC-LC IIIA period. The MBA ceramic industry of Cyprus was highly regional, and probably still organised on a local or family scale, but its products nevertheless occasionally found their way into archaeological contexts in Egypt and the Levant (Steel, in press). As copper exports gathered momentum, so did the ceramics industry and exports thereof. The evidence from Uluburun demonstrates that Cypriot ceramic exports travelled alongside the primary cargo of copper and tin on this ill-fated voyage (Bass, 1987).

The analysis of the metal industry of Cyprus contained in Chapter 4 has shown that a significant number of the urban sites at which bronze smiths were at work were relatively short-lived settlements. This fact is illustrated in Figure 17, which charts the duration of sites from the MC III/LC IA to LC IIIB periods. Only Enkomi, Kourion-*Bamboula* and Palaepaphos endure throughout the period. Enkomi is abandoned in favour of Salamis in the following Cypro-Geometric period while the settlement Kourion-*Bamboula* also moved location at the end of LC IIIB (Christou, 1994).

Figure 17: Diachronic Change in the Number of Metalworking Urban Sites



Source: Site Sizes from Knapp, 1997: 54; Excavation reports for site duration.

Artzy (2001) has remarked that sites such as Maa-*Palaeokastro*, Pyla-*Kokkinokremos*, Alassa, Kition, Maroni-*Vournes* and Kalavassos-*Ayios Dhimitrios* all experience expansion in the 13th century BC (LC IIC). As already discussed, this is when Cypriot copper oxhide ingots are found in the archaeological record of many different sites. It also correlates with the large numbers of White Slip II bowls that found their way to the Levant at this time. As Artzy has pointed out, these stack relatively easily and could be a secondary trade to the primary copper cargo on ships (*ibid.*).

The abandonment of Pyla-*Kokkinokremos* at the end of LC IIC is an interesting case. This short-lived fortified site is located at a strategic point close to the road from the mines to Kition and Hala Sultan Tekke, and overlooks Larnaca Bay from a plateau (see Chapter 4: 165). Karageorghis (1984: 26) was convinced that this was a planned settlement. Among the parallels he mentions for the architecture of the houses, as well as Cypriot examples, Karageorghis notes examples from Ugarit (*ibid.*: 28). He believed that none of the parallels was close enough to warrant any explanation of foreign influence. Perhaps it is a coincidence that this site, ideally located for monitoring the progress of copper to the coast from the mines, is abandoned at about the same time as Ugarit's destruction (there is no locally-made Mycenaean IIIC at Pyla). The evidence is not sufficient to suggest that there were Ugaritans at Pyla, by any means, but it would

be an ideal defensive vantage point from which to run a copper export business as a foreigner.

Papasavvas (2003b) believes that there was no break in copper mining in Cyprus at the close of the LBA, and that Cyprus continued to export copper. It is not inconceivable, however, that the sharp drop-off in the number of metalworking urban sites seen in Figure 17 during LC IIIA may be linked to change in copper demand within the region when considered against the regional background of the destruction of Ugarit and removal of Hittite control in the northern Levant which had improved security along the tin route from Emar. This, of course, is precisely the time when the *Sea Peoples* were at their most active in the Levant. Their raiding activities would surely have affected the security of maritime trade between Cyprus and its copper customers. Ras Ibn Hani, the site which has produced the only currently known oxhide ingot mould, is destroyed and then occupied on a modest scale by *Sea Peoples* (Bounni et al., 1978). The evidence for such an ethnicity for these new occupants, however, relies only on ceramics (Caubet, 1992).

Snodgrass (1994) has made the point that the rather decentralised nature of the LBA Cypriot copper mining industry may have allowed it to restructure in a flexible way and to adapt to new conditions. The traditional plurality of structure that appears to have characterised both LBA and Iron Age Cyprus may be analogous with pre-colonial India, for example, which did not form a single nation state, despite its geographic circumscription.

The elimination of Ugarit from the scene, and the destruction of the metal workshops there and at Ras Ibn Hani, is likely to have had a significant effect on the way trade in copper was conducted and, indeed, copper consumption in the Zone L1. Not only was a significant copper consumer removed from the map but also the principal meeting place of tin and copper routes in the LBA was no longer extant. Alalakh, which had a flourishing LBA metal industry, was also destroyed and abandoned at this time, as was Emar, at the other end of the shortest route from Ugarit to the Euphrates tin route.

Ugarit and Enkomi Across the Transition

One of the most difficult questions about Ugarit's destruction is where did the 6000-8000 inhabitants (Calvet and Castel, 2004: 219) go and why did they not return?

Although there is evidence of violent destruction at Ugarit (Yon, 1992), the balance of opinion is that the majority of Ugarit's inhabitants would have had sufficient warning to flee, rather than be killed (Caubet, 1992). Courtois (1975) states that after Ugarit was destroyed, Cyprus continued to prosper. Given the evidence presented in this thesis, I would qualify this by saying that certain cities continued to thrive, while others were abandoned. Courtois puts forward the opinion that refugees from Ugarit went to Cyprus, specifically to Enkomi, where he claims to have found in 1965 "*... un de leurs quartiers* ... ", based on metalworking traditions and funerary architecture (*ibid.*: 31).

Although Enkomi was the furthest major coastal settlement from the mines, it had both the largest urban bronze industry on the island as well as the earliest, and most enduring involvement in this activity (see Chapter 4). This statement is based on the current state of knowledge and excavation of these sites but, despite greater excavation of the southern part of the island in the last two decades, Enkomi's seeming pre-eminence in the metal industry has stood the test of time so far. Part of the reason behind this could be Enkomi's proximity to Ugarit's tin supplies. In the other direction, supplying Cypriot copper and bronze products into Ugarit's multi-faceted trade contacts in the Hittite and Egyptian spheres of influence would have most easily been achieved from Enkomi. This would include accessing demand centres through the overland route to the Euphrates Valley (Yon, 2003), where Cyprus had copper customers in the MBA. That Ugaritans might have fled to Enkomi is not implausible, given the close relationships that existed between the two cities in the closing years of the LBA. The archaeological evidence from the *Syrian* quarter identified by Courtois (1975) at Enkomi will now be discussed in greater detail.

During the late phase of the LC II period, the city of Enkomi underwent a radical change of plan and was laid-out on a regular grid (Courtois et al., 1986: 5) (see Map 8). In 1965 two quarters were excavated in the centre of the city, east of the main north south road (Karageorghis, 1966), namely Q3E and Q4E. This area seems to have been inhabited by prosperous artisans (during LC IIC and LC III) and a group of large houses were discovered there that had built funerary cellars, similar to those found at Ugarit (*ibid.*; Courtois, 1975). In addition to the similarities in funerary architecture between Ugarit and the three tombs found in these excavations, Courtois (*ibid.*) states that the tools found in the houses were characteristic of LBA Syria, rather than Cyprus. These

tools included chisels, needles, pins, spatulae, and knives (Karageorghis, 1966: 344). Courtois (1975) therefore suggests that the Syrian bronze industry that was destroyed at the end of the LBA regrouped in this part of Enkomi during the LC III period. He also adds to the equation his view that it can hardly be a coincidence that, as well as containing Syrian tools, these houses yielded balance weights of Syrian type. The presence of tools of Syrian type is possibly the strongest piece of evidence here, followed by the funerary architecture. Weight systems of various types were in use at other sites in Cyprus. As discussed earlier, both Pyla-*Kokkinokremos* and Maa-*Palaeokastro* had Syrian weights (admittedly in LC IIC contexts rather than LC III).

Perhaps Ugaritans also fled the capital city to the surrounding villages. Some of them may have congregated at other sites that were rebuilt after destruction, such as Tell Sukas and Tell Kazel, or even made their way south to the undamaged Zone L2 with which the city's merchants had had considerable contact during the LBA. Where the several thousand inhabitants of Ugarit went remains an unanswerable question at this point.

New Products for the Iron Age?

Papasavvas (2003b) has put forward the argument that Cyprus continued to be an active copper producer and exporter after the end of LC IIC. Certainly, the material culture of the island is rich in terms of bronze in LC IIIB – CG II period, as evidenced by the bronze tripods found in graves at Palaepaphos-*Skales* and Kourion-*Kaloriziki* (*ibid.*). It is interesting that both of these cemeteries are located at the western end of the island. Interestingly, also, evidence from Palaepaphos-*Eliomylia* tomb suggests a pioneering role of this site in western Cyprus in adoption of iron for tools (Karageorghis, 1990b: 84).

Given the limited amount of provenience work that has been done on bronze artefacts in Iron Age contexts in the Levant, particularly on the coast, it is impossible to prove that Cypriot copper continued to flow to the urban centres that continued to function in the Iron Age. As discussed in Chapter 4, evidence from Pella (Philip et al., 2003), inland in Zone L3, suggests that copper was obtained from more local sources during the Iron Age, in contrast to the LBA. If Cypriot copper did find its way to the ports of the

Levantine littoral that were still functioning, the question then arises of what did the Levant have to offer in return?

The Canaanite jars found at Palaepaphos-*Skales* that have precise parallels in Tyre and Sarepta have already been discussed. These would have been containers for wine or other potable products, in all likelihood, although residue analysis has not been carried out on material from the sites discussed in this thesis. Based on widespread availability of grapes in the Near East before 3000 BC, Leonard (1995) suggests that, although dry goods, spices, beer and olive oil have been suggested as their contents, wine was the major commodity carried therein. At the close of the LBA, a much larger container appears in the southern Levant, namely the collared-rim pithos, or jar. Whereas a typical Canaanite jar would be c. 50 cms in height (*ibid.*), collared-rim pithoi are usually 1.0-1.2 m in height (Wengrow, 1996). Wengrow cites capacities of c. 150-200 litres and points out the advantages of their design in terms of even weight distribution and handling ability. These pithoi, in turn, are the forerunners of large Roman transport amphora (*ibid.*). The majority are found in late-13th and 12th centuries BC depositional contexts, although they continued in use until c. 900 BC (*ibid.*).

These vessels were extremely heavy when full. Wengrow cites the weight of one particular empty jar as 32 kg (close to that of an oxhide ingot of copper). If full of water, this would add 150-200 kg to the weight of the pithos itself, making transportation by donkey highly unlikely and that by cart very difficult, given the shape of these vessels. The camel, therefore, seems the most likely option for their transport overland to Levantine ports (*ibid.*). Artzy (1994) has connected the advent of collared-rim pithoi in the archaeological record with the domestication of the dromedary (the one-humped Arabian camel) and trade in aromatics from Arabia to the Levant and beyond.

Liverani (1997: 561) comments that camels are not mentioned in Bronze Age texts in the Ancient Near East:

"For the moment being, Bronze age (sic) caravans remain made up of donkeys, not of dromedaries..."

The domestication of the Bactrian (two-humped) camel is attested in the mid-3rd millennium BC on the Iranian plateau (Wapnish, 1984) but physical evidence for the

use of dromedaries is absent before the LBA in the Levant, and is very rare for this period. In the southern Levant, Tell Jemmeh, about 10 km south of Gaza (Zone L4), on the border between arid and semi-arid land, has produced such evidence (*ibid.*). The earliest bones recovered were in LBA strata (14^{th}-13^{th} centuries BC), where 5 bones were recovered but only 2 bones were recovered from the period when Tell Jemmeh was a Philistine settlement (*ibid.*). This decline is interesting as the evidence already presented (namely, the rarity of Philistine ceramic exports in Phoenicia) suggests that the Philistine settlement had a low level of engagement in long-distance trade in its earliest decades. The major period of growth in the deposition of camel bones occurs much later, in the seventh century BC, when the region comes under Assyrian influence (*ibid.*).

Liverani (2003) has discussed the impact of the availability of camels as beasts of burden. He believes that the availability of dromedaries broadened the scope of trade networks to include arid areas such as Arabia for the first time and made their aromatic products (used in religious ceremonies) more easily available in the markets of the Eastern Mediterranean. He has associated the rise in the caravan trade, and the greater involvement of nomadic people in this trade, with the transition from the LBA to the Iron Age in the Levant (*ibid.*).

Earlier scholarship, for example Esse (1992), correlated the appearance of collared-rim pithoi with the spread of Israelite settlements in the Holy Land (Artzy, 1994). Artzy's discovery of many collared-rim pithoi in 13^{th} century BC contexts at the coastal emporium of Tel Nami (in Zone L3 on the Carmel Coast of Israel), however, has been instrumental in re-evaluating both the role of this container in long-distance trade and the time-span in which it was used (Wengrow, 1996).

Analysis of collared-rim pithoi from Tell Dan has revealed that, although some were locally made, the majority had been manufactured at other sites in Israel, including on the coast of the central Levant (Yellin and Gunneweg, 1989). Wengrow (*ibid.*) suggests that their distribution in the Levant indicates that these were export containers used to move perishable products from the highlands of Israel (e.g. wine and olives) to Egyptian centres in the Jezreel Valley for on-shipment to the coast for export. He points out that the pithoi certainly appear to have been transported over significant distances overland, based on NAA (*ibid.*). He highlights the fact that they are not present on the southern

coastal plain of Israel or the Beersheba Valley (Zone L4), which suggests that these products were not intended for consumption within the southern Levant, but for export. Wengrow further proposes, following Susan Sherratt's (1994) reasoning that the palatial economies had ceased to control access to and the circulation of bronze by the end of the LBA, that the Egyptian government was forced to intensify agricultural production in Egypto-Canaan to make up for this change in economic structure.

So far, Tel Nami is the only coastal Levantine site to yield these pithoi. Artzy (1994) suggests that one of the reasons behind the wealth of Tel Nami was its involvement in the supply of incense, contained in these pithoi, to other maritime destinations in the Eastern Mediterranean. She suggests that collared-rim pithoi were used as the containers for incense from Arabia that were carried on the backs of camels, via Transjordan, for export to the Mediterranean region. Wengrow (1996) presents evidence for such a route, both based on Egyptian texts and from the distribution of collared-rim pithoi in the archaeological record. East of the Jordan river, collared-rim pithoi are found at Tawilan in the south to Tell es-Sa'idiyeh in the north, from which point the route would have struck north west to the coast (of Zone L3).

Artzy (1994) also points out that there are similarities between the Tel Nami pithoi and ones found at Maa-*Palaeokastro* on the west coast of Cyprus (e.g. Karageorghis and Demas, 1988: Plate LXXXII – 563). One such pithos (no 563) was found on Floor II, dating to the LC IIC period. Other sites in Cyprus have also yielded collared-rim pithoi, namely Pyla-*Kokkinokremos* (Karageorghis and Demas, 1984: 34; Plates XXI-XXIV), Athienou (Dothan and Ben-Tor, 1983: 113-115) and Myrtou-*Pigadhes*, an inland sanctuary site that was abandoned in LC IIIA (Du Plat Taylor, 1957: 56-57).

Impact of New Ethnic Peoples on the Levantine Iron Age Economy

Chapter 2 reviewed the evidence for the establishment of new ethnic groups in the Levant in the archaeological record of the levels immediately post-dating the end-LBA destructions. The evidence for significant migration and the maintenance of a distinct cultural tradition from the indigenous inhabitants is most convincing in Philistia (in coastal Zone L4). Sites within the Philistine settlement exhibit traditions that are new to the Levant and which endure and evolve over the next two centuries. The evidence in this area goes well beyond the arrival of new ceramic styles. In Philistia, distinct dietary

(Hesse, 1990; Stager, 2004), architectural (Dothan and Gitin, 2002; Stager, 2004) and ceramic (Dothan and Zuckerman, 2004; Stager, 2004) traditions from those of surrounding Egypto-Canaan may be identified.

The question then arises, what role did this part of the Levant play in long-distance trade in the IA I? Unlike their counterparts in Zones L2 and in the northern part of Zone L3, the Philistines seem to be disengaged from trade with Cyprus, which during the LBA was important, judging by the quantities of Cypriot ceramics found at Ashdod (Dothan, 1967; Dothan and Porath, 1971) and Tell el-'Ajjul (Fischer, 2001). For example, Wavy Band Pithoi of Cypriot origin are abundant in sites in greater Phoenicia (including the Carmel Coast and Akko plain by the mid-11th century BC) while these are totally absent from Philistia (Gilboa, 2004). As Gilboa (*ibid.*) points out, elements of the Cypriot decorative syntax enter the Phoenician decorative repertoire on commercial containers (flasks and jars) during the 12th and early 11th centuries BC and there is ceramic evidence of maintenance of commercial contacts between Cyprus and Phoenicia throughout this period. An interesting aside is that while potters in the Philistine settlement concentrated their considerable artistic skill on decorating dinnerware, those in Phoenicia confined decoration to small commercial containers, suggesting an economic purpose for this decoration (*ibid.*).

The continuity of trading contacts between Cyprus and Philistia cannot be proved based on the ceramic evidence (*ibid.*), especially as Dothan and Zuckerman (2004) see the co-evolution of Mycenaean IIIC style in Cyprus, Philistia and Cilicia as being due to movements of people rather than trade. By the time of Wen-Amon's voyages (no later than 1076 BC), which took him along the Levant coast from Egypt and to Cyprus, Phoenician bichrome wares existed (Anderson (1990)). Anderson believes that this was a response to competition between Cyprus, Phoenicia and Philistia for trading markets and a need to package new commodities distinctively. As Susan Sherratt (2003a: 44) has pointed out, however, it is scarcely believable that the shutters came down on international trade for a hundred years or so after the close of the LBA (a view put forward by Barako (2000)) after the Philistines established their cities on the ruins of Ashkelon, Ashdod and Ekron. She cites the fact that the Philistines were short of raw materials, such as copper and timber, and continued to use these in quantity. There are no analyses of bronze objects available, however, to prove or disprove the engagement

of Cyprus in trade with Philistia during the earliest part of IA I. Evidence from Pella and Tell Dan suggests that these sites were accessing copper sources that could be reached by land (Feinan and Timna respectively) during the Iron Age and were not acquiring Cypriot metal.

D'Agata et al. (2004), however, have remarked that not a single Cypriot-made Mycenaean IIIC style sherd has been found at Ashdod, Ekron or Ashkelon, in contrast to the situation at Tell Keisan, Akko and Beth Shean. The degree of engagement of Philistines in maritime trade during the IA I, therefore, remains an open question. This contrasts strongly with the evidence from Phoenicia and Cyprus (particularly in the west of the island), where continuity of contact can be demonstrated through the ceramic record. Chapter 6 will return to the issues discussed in this chapter and integrate the evidence presented within a discussion of the influence of economic factors on settlement continuity across the LBA/Iron Age transition.

The crisis that enveloped most of the Eastern Mediterranean at the close of the LBA underwrote a significant change in the nature of long-distance trade and who conducted it. As a result, the trading landscape was transformed in the earliest decades of the Iron Age. This thesis has considered the archaeological evidence from the LBA related to imported ceramics from port cities along the Levant coast. A new methodology has been developed that facilitates comparison of these data from different coastal Levantine sites. Using a world-systems framework of analysis, information has begun to emerge about the directness and intensity of the trading mechanisms that brought these items to their point of deposition. In addition, given that bronze was *the* key strategic commodity of the LBA, a holistic survey of textual, archaeological and scientific data has been presented of the trade in copper and tin and the evidence for urban bronze metallurgy. This, also, reveals differences in the degree of engagement between cities in the various Levantine zones and the tin and copper supply routes of this period. The role of Cyprus in Eastern Mediterranean trade appears to be unambiguously important, both in the bronze and ceramic industries. Furthermore, Cyprus continues to engage in long-distance trade in the earliest part of the Iron Age. Along with Phoenicia, which did not experience destruction at the end of the LBA, Cyprus has the potential to answer questions about the evolution of the economic structure of the region during this critical period, at least as they relate to maritime trade.

The inadequacies of, and lacunae in, the data have been pointed out several times in this thesis and the synthesis presented in this chapter must necessarily be considered a working hypothesis, rather than closure on this subject. Unquestionably, it will require refinement as more excavation data become available from key areas. It is also worth underlining that this thesis has focused specifically on imported ceramics and bronze objects (and trade in the metals from which they were made). Although these commodities, particularly the ingredients for bronze, formed the backbone of LBA long-distance trade in the Eastern Mediterranean they are, nevertheless, but part of a more complex network that supplied timber, livestock, foodstuffs, textiles, other perishable goods and even personnel. All these activities are documented in the archives of Ugarit (Yon, 1994: 426) but, unfortunately, are only very rarely visible to the archaeologist (Knapp, 1991).

The discussion that now follows synthesises the key findings of this thesis on the nature of the economic structure of the Levant in the LBA. It also considers how variations in long-distance trading relationships may have influenced which sites avoided destruction at the close of the LBA and which were abandoned for good. It then examines how the regional economy restructured during the earliest decades of the Iron Age to take account of the disappearance of LBA trading partners of long standing and to capitalise on new opportunities. The original contribution of this research and the utility of the approaches taken to the data in future research are integrated into this discussion.

The LBA Trading Landscape on the Levantine Littoral

The general picture of maritime trade at the end of the LBA in the Eastern Mediterranean has moved away from notions of an Aegean, or any other, inter-regional thalassocracy. There were many active trading ships and fleets operating from various Levantine, Anatolian, Aegean, Cypriot and Egyptian ports. As Monroe (2000: 344) has pointed out, there is no evidence of trading networks consisting of mono-ethnic groups in the LBA. He suggests that the rules of long-distance trade were sufficiently well understood that this militated against the survival of strictly ethnic networks of trade. In other words, relationships built on trust existed between maritime traders and merchants in the harbour towns across the region (*ibid.*).

Liverani (1987: 67) describes the security situation in the Levant after the battle of Kadesh as a state of *"conditioned coexistence"* between the dominant regional empires of Egypt and Hatti. Under such conditions, long-distance trade probably reached new highs, both in terms of overall volume, the range of items traded and the penetration of imported goods into the homes of ordinary people. Legal and military protection fostered investment in long-distance trade by reducing risk, thereby increasing confidence in a successful outcome to a trading venture (Monroe, 2000: 342).

This thesis has shown that relations between the Aegean and Cyprus with different Levantine ports were far from uniform along the length of the Levantine littoral. The web of long-distance trade contacts in the Eastern Mediterranean of Levantine ports was complex and the cities of the Levantine littoral seem to have enjoyed a reasonable degree of autonomy to select their own material culture. This is in stark contrast to the more centrally controlled selections of material goods found in the core areas of Egypt,

the Hittite Empire and, to a certain extent, Mycenaean Greece. In addition to acting as a container for trade goods, the repertoire of imported open ceramic shapes in the Levant, both Mycenaean and Cypriot, suggests that pottery was also valued for itself.

Chapter 2 concluded that there is no reason to suppose that only one system of exchange operated within ancient societies. This thesis has used all the classes of evidence available to assess what part entrepreneurial trade played in the acquisition of copper, tin and imported ceramics on the northern Levantine coast during the LBA. Textual records from Ugarit, both from palaces and the archives of merchants, document the strategic trade in the metals alloyed into bronze, but on the subject of ceramics, the texts are mute.

Copper and tin were the most important materials required by societies in this region, both for weapons and tools (Monroe, 2000: 358). Sherratt and Sherratt (2001) suggest that the overall trajectory of the Bronze Age economy of this region was driven by the need to acquire these materials. In other words, growth in demand for these metals underpinned the expansion of long-distance trade generally. The archives of the wealthy merchants of Ugarit document their involvement in profit-motivated trade on their own account, although they did occasionally acquire goods for and provide services to the palace. This calls to mind the evolution of East Asian trade in the period of activity of the British East India Company between 1600 and 1834 AD (Farrington, 2002). By the end of the 18th century, company employees were able to conduct trade on their own account as a result of relationships they had established with merchants and ship owners across the region on official company business (*ibid.*: 79).

The more decentralised political structures of Cyprus and Phoenicia at the close of the LBA, both of which had a long history of engagement in maritime trade, would have, surely, provided the environment for merchants to pursue overseas ventures with a profit motive. Unfortunately, no primary documentary evidence survives that can shed light on the nature of this trade. Both Cyprus and Phoenicia lack clay tablet archives of the kind found at Ugarit. This lack of texts is more likely to be the consequence of the use of different media, rather than a reflection of a lack of interest in recording transactions (or an artefact of survival in the archaeological record).

The original analytical approaches that have been applied in this thesis may be summarised as follow:

1. I have avoided analysing sub-regional patterns of trade on the Levantine coast based on today's national boundaries. By dividing the Levant into four zones, consideration has been given to the variability of the terrain, as well as likely trade routes from the Levantine coast to interior regions. Moreover, as well as being delineated by topographical factors, these four zones also broadly reflect the political geography of the Levantine coast in the last half-century of the LBA (when the region was under the influence of the Hittite and Egyptian empires) and the first century or so of the Iron Age (when Phoenicia and Philistia began to emerge as distinct cultures).

2. The contextual analysis of *both* major classes of ceramic imports to the Levant together is also a novel feature. Other recent studies have concentrated on analysing the contexts in which Mycenaean wares have been found in the Levant and elsewhere in the Eastern and Central Mediterranean, for example Van Wijngaarden (2002) and Steel (2002). These have usefully catalogued the different shapes and styles of Mycenaean wares found in different context types and drawn inferences on how Mycenaean wares were valued within these societies in life, death and in religious settings. What differentiates my work is that it also considers the other, and often more abundant import, Cypriot wares. Wherever possible, I have also sought to position these imports within the total ceramic assemblage and how their importance changed over time.

3. The application of a world-systems perspective to contextualised and quantified ceramic data goes beyond what has been done before on a regional scale in terms of marrying theoretical perspectives with the detailed archaeological evidence. This process has revealed nuances on the intensity and directness of trading relationships between constituent parts of the LBA Eastern Mediterranean world-system and how these changed over time.

4. A holistic approach has been taken to interrogate the evidence for bronze metallurgy during the LBA at urban sites in the Levant and Cyprus as well as the long-distance trading networks that supplied copper and tin to their bronze smiths.

Archaeological, textual and scientific data were analysed side by side to build a picture of the degree of engagement of each of the four Levantine zones in this trade. Answers to the same questions that were asked of the imported ceramic record were sought in order to assess the intensity and directness of engagement in this trade, and how this evolved over time.

The Ceramic Evidence

The analysis of imported ceramics at representative ports in each of the Levantine zones revealed that the repertoire at Sarepta in Zone L2 was distinctive. It had an anomalously high concentration of LBA Mycenaean wares per 100 sq m of excavated domestic context compared with the assemblages of similar ports in the other zones, both to the north and to the south. Not only is Sarepta's assemblage dominated by transport/storage containers, but also Mycenaean finds are two to three times more abundant per unit of area of excavation than in a comparable context at Ugarit (see Figure 12 on page 110). The published evidence suggests that more imported Cypriot than Mycenaean wares were available to ordinary inhabitants at Ugarit while the picture is reversed at Sarepta.

In terms of this quantitative measure of Mycenaean finds per 100 sq m, the Sarepta excavation areas yielded results that were similar to, or even slightly higher than, those obtained from the two domestic contexts analysed from Enkomi in Cyprus. This suggests that Sarepta had access to Argive goods that was as direct as that enjoyed by Enkomi and other Cypriot sites. This contrasts with the situation at Ugarit, where the quantitative evidence argues in favour of an indirect mechanism, via Cyprus, for the acquisition of these wares.

A greater proportion of sites in Zone L2 receive Mycenaean wares *earlier* than in the other Levantine zones (see Figure 13 on page 112), with one third of sites yielding LH IIB – LH IIIA: 1 wares, which is roughly twice the percentage in other zones. Sarepta's zone, therefore, appears to have greater early contact with suppliers of Aegean wares. This pattern resembles that in Enkomi (see Figure 14 on page 113) and sites in western Cyprus, notably Palaepaphos, which has produced some of the earliest LBA Aegean ceramic imports on the island. It is possible that Sarepta acted as a distribution centre for Mycenaean transport/storage vessels and their contents to important inland centres like Kamid el-Loz in the Biqa Valley and Tell Dan in Upper Galilee. Selected assemblages from these sites corroborate this notion.

That LBA Cypriot and Mycenaean imports are often found together in Levantine LBA contexts has been well known for many years. This thesis has drawn attention to the anomalous nature of Sarepta's assemblage by analysing the relative quantities of these wares in representative coastal sites in the different zones. Ugarit, Tell Abu Hawam and Ashdod all had more Cypriot wares than Mycenaean ones. Data from the recent excavations at Tell el-'Ajjul (in Zone L4) show that 88% of imports were from Cyprus while only one possible example of a Mycenaean import was found (Fischer, 2001). In contrast, once Mycenaean wares became available at Sarepta, they quickly rise in number to dominate the imported assemblage (see Figure 15 on page 114).

This, too, argues for a higher involvement of Aegean maritime traders in the voyages that delivered foreign ceramics to Sarepta. Evidence from the remainder of Zone L2 is, unfortunately, very meagre at present. Bikai's stratigraphic sounding at the neighbouring port of Tyre revealed an even higher concentration of Mycenaean wares. However, the majority of the imported assemblage at Tyre was Cypriot, bearing witness to a flourishing trade in Cypriot ceramics, as well as an unusually high amount of Mycenaean wares. The ongoing excavations at Sidon may shed further light on the international trading relations of the ports of Zone L2.

The total absence in Ugarit's rich textual record of evidence for a *direct* trading relationship with Aegean merchants is striking, and probably not an artefact of survival, given how many merchants from other LBA ports and nationalities are mentioned in these sources. This is consistent with the proposition that Cypriot middlemen were involved in the delivery of these ceramics to Zone L1. Incised Cypro-Minoan marks on large Mycenaean transport/storage vessels found at Ugarit also support this idea, as do the quantitative data presented in Figure 12 (page 110). A domestic context at Ugarit has a significantly lower concentration of Mycenaean wares compared with the two similar contexts analysed at Enkomi, its closest Cypriot trading partner. At Tell Abu Hawam and Ashdod in the southern Levant, the data also argue in favour of a Cypriot role in supplying Mycenaean wares.

Aegean Linear B texts from the destruction layers at Pylos, Knossos and Mycenae provide an insight on knowledge of the Eastern Mediterranean from the west – the Mycenaean world. These texts attest ethnonyms and toponyms from Cyprus and Phoenicia, but not from elsewhere in the Levant. Although these archives are much

more limited than those at Ugarit, taken together with the absence of Aegean merchants from texts from Ugarit, they lend support to the idea that Mycenaeans may have had *direct* knowledge of Phoenicia and Cyprus, and relationships with individuals from these places, but not of other parts of the Levantine littoral in the closing years of the LBA.

Chapter 5 discussed possible maritime routes from the Aegean to the Levant (and vice versa) during the LBA. These may have required revictualising stops on the west coast of Cyprus and I have suggested that Maa-*Palaeokastro* may have been such a way-station. A reassessment of the archaeological evidence from this site suggests that early interpretations of its function as a bridgehead for Aegean colonisation of Cyprus are less likely than an explanation based on its involvement in trade, both with the Aegean and the central Levant. Not only does this peninsula site have two excellent harbours and access to fresh water, but also its material culture is of a highly international character. It has a number of Aegean cultural correlates, not only Aegean-style pottery, which suggests the presence of resident Aegeans, be they artisans or traders. Balance weights of Aegean and Western Asian standards also suggest an involvement in trade, and the site has a notably large number of weights on the Aegean standard compared with others in Cyprus. Trade with the Levantine coast is attested by a high number of Canaanite jars relative to other Cypriot sites, both in LC II and LC III contexts. Many of these have been provenienced to the central Levant and, given the degree of destruction Zone L3 had endured at the end of the LBA, it is more probable that the jars found in LC III contexts at Maa came from Zone L2. It is possible that ships conducting trade between the Aegean and Zone L2 stopped at Maa to collect supplies, and quite possibly local Cypriot goods to be traded, before resuming their onward voyage. In terms of what is visible within the archaeological record, Mycenaean pottery (including the contents of small closed transport/storage vessels) went one way, while Canaanite jars (presumably containing wine or other liquid products) went the other.

The inhabitants of the Levantine coast were free to choose their own material culture during the LBA. This is particularly true in the case of imported ceramics and this decentralised trade in relatively low value items found a ready market there. This thesis concludes that Mycenaean ceramics may have reached trading emporia on different parts of the coast of the Levant through more than one set of trading relationships.

Wheels within wheels may have been operating, and Cypriots may have taken the lead to supply some Levantine ports with Mycenaean ceramics and their contents, especially Ugarit, while merchants from the Aegean may have evolved more direct relationships with their counterparts in the area that survived the widespread end-LBA destructions to become Phoenicia.

The case study presented at the end of Chapter 3 on the current excavations at Tell Tweini illustrates how new archaeological data may be used to assess the predictive potential of the hypothesis I have put forward about the routes through which these ceramics may have reached different parts of the Levantine coast. Developing a new orthodoxy about LBA trade, or a suite of generalisations divorced from excavation data, has not been the objective of my work. Rather, as in the case of Tell Tweini, I hope that excavators will begin to think quantitatively about the relative importance of different types of imported pottery assemblages as they emerge from the ground, and that they will seek to relate this information to what is known about similar contexts from other sites regionally. The next level of resolution (for example inter-site trading dynamics within a zone) will only then begin to appear. In the example of Tell Tweini, these could be questions about whether it received its ceramic imports through Ugarit, or through a more direct mechanism.

The Bronze Evidence and Trade in Copper and Tin

If trade in ceramics could be left in private hands (and not recorded in palace archives), making sure that adequate supplies of copper and tin reached bronze smiths to produce weapons was surely one of the prime strategic issues facing LBA rulers and their administrators. It is probably not an exaggeration to contend that the strategic importance of bronze to the upper echelons of LBA society in the Levant (and their Hittite and Egyptian overlords) must have been at a level approaching securing the flow of crude oil to the leaders of industrialised nations today. When sources of such strategic commodities are threatened, military action soon follows. A recent example of this would be the response of the US-led coalition to Iraq's invasion of Kuwait in 1990. Given the number of wars and campaigns the Hittites and Egyptians embarked upon during the LBA, the armies of these empires alone must have required very substantial quantities of bronze for weapons and armour on a constant basis, especially before they settled their differences after the battle of Kadesh.

A review of the availability of bronze in sites across the Levant reveals rich assemblages of tools as well as weapons and items of adornment and ritual significance. The same is true of Cyprus. Up to the very end of the LBA, there is no evidence that tin was short either in the northern Levant or Cyprus, despite the fact that it had to be sourced, in all probability, from Central Asia. This implies that the route between Emar and Ugarit, along which donkey caravans carried this scarce commodity, was securely within territory that the Hittites controlled and protected in the closing years of the LBA.

MBA Western Asian texts attest the role of Cyprus as a copper supplier and the excavations at Ambelikou-*Aletri* have confirmed that copper mining took place in this period on the island (dating to the 19th century BC, based on ceramics found in the mine workings). Recent work at Malia in Crete proves that Cypriot copper was being used there to manufacture bronze in the 18th century BC. None of the oxhide ingots found in pre-13th century BC contexts map to Cypriot ore bodies, whose lead isotope signatures have been extensively documented. This changes dramatically at the beginning of the 13th century BC, the date of the Uluburun shipwreck. This excavation has yielded the largest single find of copper (and tin) oxhide ingots. The Uluburun copper ingots originated from Cyprus and all other oxhide ingots tested from dateable 13th century BC contexts map to Cypriot ore bodies. This is also true of traces of copper recovered from the only stone oxhide ingot mould yet known found at Ras Ibn Hani, Ugarit's subsidiary palatial site. Metallurgists in workshops at this palace, in all likelihood, used this mould to fashion ingots of internationally recognisable form for export, either by ship or by donkey caravan. They would, surely, not have expended the energy and effort to cast such ingots from Cypriot copper had the metal been destined for the crucibles of Ugaritic bronze smiths.

The archives of the wealthy merchants of Ugarit from the final years of the city's history reveal their entrepreneurial activities in the metals trade, as well as dealings in many other goods that are less visible in the archaeological record. They acquired copper and tin and traded these metals, as well as manufactured bronze items, to other LBA centres. Kadesh, at the southern edge of Zone L1, was such a destination that was reached overland. The limited amount of scientific analysis conducted on Ugarit's bronze artefacts suggests that this major emporium had access to copper from several

sources, including from ore bodies in Cyprus, Turkey, Timna in Israel and Lavrion in Greece. Access to multiple sources of copper seems to be a feature of the LBA. This is also consistent with the evidence from Pella in Zone L3, which suggests that inland sites were also tied-in to an extensive international supply network during this period.

Evidence of bronze recycling appears in the archaeological record of the 13th century BC, particularly towards its end. While the Uluburun metal cargo is dominated by metal ingots, the Cape Gelidonya ship (dating to a century later – approximately 1200 BC) carried both ingots and scrap. Excavations at Tell Dan, Tel Nami and Akko have also produced evidence that suggests that bronze was being recycled. The evidence from Tell Dan suggests that recycling became an important part of the metal supply there in IA I. Pella, in the Jordan valley south of Tell Dan, which had access to copper from multiple sources during the LBA, was using more local sources (that could be reached overland) by the IA I/II transition. This suggests that the international LBA copper supply network had ceased to function to inland sites by this time.

In general, a review of the archaeological and scientific data suggests that Zones L1, L2 and L3 were well supplied with copper and tin during the LBA. Zone L4, despite being closest to the active copper mine at Timna, seems less rich in evidence of substantial urban metalworking. Ample quantities of Cypriot ceramics have been found at coastal sites, including most recently Tell el-'Ajjul and, perhaps, further excavation will produce more evidence of this. A possible explanation for this lower amount of evidence of bronzeworking might be the proximity of Zone L4 to Egypt and its distance from the tin supply route running through Zone L1 to the coast. The limited scientific evidence from Tell el-'Ajjul suggests that there may have been issues in tin supply at this site during the LBA.

The extraordinary finds of four Cypro-Minoan tablets either in or at surface above the houses of four merchants from Ugarit who were involved in the metal trade according to other textual sources, is surely significant. This attests a link between these merchants and Cyprus (most probably with Enkomi, which is the only other site to have produced Cypro-Minoan tablets).

It is tempting to speculate that the language written in this unreadable script was used as a trade language of some sort, given the find spots for these tablets at Ugarit (and the

fact that it is used to scratch information on Mycenaean transport/storage vessels). It is also tempting to link it to the metals trade, given that copper and bronze were probably Enkomi's key exports, while tin from the port of Ugarit would have been a vital import. An interesting example of a modern trade language comes from the mining industry in South Africa, namely Fanagalo. This language, which is still used today, arose as a *lingua franca* for miners. It has a very limited vocabulary and is used underground in the mines by speakers of different African languages to communicate important information. It is derived from several African languages and also contains influences from English and Afrikaans. Whether this, in any way, parallels how the language written in the Cypro-Minoan script was used is pure conjecture, however.

Quantification of the LBA metal trade is problematic, given that recycling was such a prevalent practice by 1200 BC and must have been even more so after the end of the LBA (when tin probably became harder to get hold of for a time). Consequently, no similar measures to those presented for imported ceramics can be calculated for this body of evidence. Nevertheless, some tentative conclusions may be made about the trade in copper and tin during the LBA.

1. Among Levantine ports, Ugarit was probably the major primary importer of both copper and tin, and was probably the key gateway for tin to the Eastern Mediterranean trade network and that for Cypriot copper to inland Syria and the Euphrates valley.

2. Entrepreneurial merchants were responsible for some, if not the majority, of this trade at the end of the LBA. The protection afforded by the Hittites no doubt contributed to the security of the tin route from Emar to Ugarit.

3. Ugaritic merchants traded tin and copper onwards, both by land and by ship to other Levantine destinations.

4. Ugarit had close contacts with Enkomi, the nearest Cypriot centre, as attested by the Cypro-Minoan tablets found at Ugarit. Enkomi has the most extensive evidence of urban metallurgy, despite being the furthest major Cypriot LBA coastal urban centre from the mines.

General Conclusions

Overall, this thesis has identified a number of distinguishing features between the LBA trading relationships of coastal areas of the two zones of the northern Levant.

1. Zone L2, which was not destroyed at the end of the LBA by hostile action, appears to have had more direct trading links with the Aegean than Ugarit.

2. Ugarit's strategic importance was unparalleled among LBA Levantine ports as it can be demonstrated to have supplied both copper and tin to other regional centres. Cypriot ports were undoubtedly active in the copper trade to the Levant, but the island would have had to import its tin from the mainland, most probably from Ugarit.

3. Entrepreneurial trade was already taking place at Ugarit by the end of the LBA, as documented in the archives of prosperous merchants. It is likely that trade was being conducted for profit by the coastal merchants of Zone L2 also in this period, whose economy was free from Egyptian imperial demands in the closing decades of the 13th century BC. The merchants of Sarepta, Tyre and Sidon would have been literally free to trade with whomever they pleased in whatever commodity they wished, guided only by the requirement to reap sufficient returns on their ventures to remain in business.

Absence of Destruction May Correlate to Closer Aegean Ties

The preceding discussion has painted a picture of the economy of the northern Levantine coast against which the destructive events of the early 12th century BC took place. Map 1 shows the sites that were destroyed at this time across the region and highlights the exemption of Phoenicia from this regional phenomenon. What explanation can be put forward for this?

There is little doubt that the agents of destruction at Ugarit were hostile invaders. They probably arrived by sea, but perhaps some groups came overland after completing the destructions at sites such as Emar and Alalakh to the east and north. Hittite imperial authority had already crumbled. Texts attest that there was knowledge at Ugarit that hostile invaders were active regionally. There is also archaeological evidence that many

of its several thousand citizens evacuated the city prior to its destruction, burying their valuables for future retrieval.

Unquestionably, among all Levantine coastal cities Ugarit was an attractive target for raiders, if not *the* most attractive. Its existence and prosperity must have been well known throughout the Eastern Mediterranean region, even among groups that did not have the occasion to trade there directly. This calls to mind the activities of the Vikings, another group of sea-borne raiders. Vikings tended to select their targets for coastal raids based on knowledge of portable wealth and an expectation of weak defence (which is why monasteries and coastal trading settlements in the British Isles made such attractive targets for them). It is also not inconceivable that the fact that Ugarit did not have a Hittite garrison, and had no reputation for military prowess in its own right, was also known to the invaders even if they had never before sailed into Ugarit's fine harbour for more peaceful trading purposes.

Perhaps the key lies in the suggestion from texts that Aegean merchants did not transact business directly at Ugarit, which agrees with the imported ceramic evidence. Aegean merchants and sailors would, therefore, have had no personal contacts and relationships at Ugarit that would encourage a peaceful approach for refuge or assistance and prevent the use of force as an opening gambit. In such as situation, groups of individuals driven to their ships in search of better conditions elsewhere (possibly as a result of adverse climatic events in their homelands), and armed with the best weapons of the age, would have had few qualms in sacking Ugarit and plundering its houses, palaces and tombs.

With Emar and Alalakh also destroyed permanently, the tin route to the coast from the Euphrates would have at the very least become more hazardous. After the withdrawal of Hittite authority, it is likely that greater interference from Aramean nomadic tribesmen would have contributed to diminished security of this trade route (Markoe, 2000: 26). In any event, without Ugarit as a major market for the tin, the donkey caravans would have soon reduced in number, or ceased to ply this route altogether.

Liverani (2003) has made the point that the rise in involvement of tribal groups in trade is coeval with the LBA/Iron Age transition. He states that the main prerequisite for this was the domestication of the camel, whose ability to travel without water for greater distances than donkeys eventually resulted in profound changes in overland trade

networks over the succeeding centuries. There is some evidence for camel domestication in the LBA Levant, but good evidence of the intensification of their use comes only much later in the Iron Age (during the period of the Assyrian Empire).

The decline in importance of Kamid el-Loz in the Biqa valley, which had been a key node in Egypt's overland trade routes during the LBA, is also probably evidence of this diminished trade inland (*ibid.*). Against this background, it would be natural for the Phoenician ports to focus trading ventures increasingly in the maritime sphere and, given the devastation that surrounded them on the Levantine coast, it is not surprising that they should have focused their attention on Cyprus (which was still in a position to supply copper). Moore and Lewis (1999: 74), speaking from the perspective of modern business scholarship, see analogies between the densely populated cities of Iron Age Phoenicia, with their skilled craftsmen, and the trade-based maritime economies of Britain and Japan in more recent times.

At Sarepta, there is no sign of destruction and none of intrusive population elements. The stratigraphy of the site continues unbroken through this period, and the same is true at Tyre. I have suggested that the imported ceramic evidence at Sarepta attests a different, and more direct, trading relationship between this city and the Aegean during the LBA than is evidenced at Ugarit, Tell Abu Hawam and Ashdod. If the raiders came from the Aegean (be that mainland Greece, the Islands, or western or southwestern Turkey), they would be less likely to assume a hostile posture towards the inhabitants of a city with which they had engaged in extensive and direct trade over a large number of years. The fact that ethnonyms and toponyms from this part of the Levant coast, and no other, are recorded in Linear B archives supports this contention.

It is intriguing that the site that escapes destruction (perpetrated by invaders that are linked with an Aegean cultural background, at least in Philistia in the southern Levant) is the one that has the greatest density of Mycenaean pottery finds when comparable contexts are examined. Perhaps the key to understanding site survival across the LBA/Iron Age transition, therefore, lies in the existence of extensive direct LBA trading relationships with the group of people that are driven to become raiders at the close of the LBA.

Transformation and Restructuring after the Crisis

Liverani (2003) suggests that there was a fundamental shift in the philosophy behind, and motivation for, long-distance trade at the end of the LBA. He characterises Bronze Age trade as being driven by searching for raw materials unavailable at home while he sees Iron Age traders as being solely driven by making a profit. In other words long-distance trade ceases being an administered process at the end of the Bronze Age and becomes an entrepreneurial one. Liverani's position has become more nuanced in recent years and he now allows that both administered and entrepreneurial trade were being conducted in the city-states of the Levant before the end of the LBA (*ibid.*). The evidence summarised by Monroe (2000: 342-343) suggests that some, if not most, of the long-distance trade of Ugarit was in the hands of entrepreneurial merchants, rather than palace bureaucrats, in the period leading up to its destruction.

Sherratt and Sherratt (2001) have referred to this process of transformation of the economy from palace to merchants as privatisation. Privatisation, as evidenced by transactions over the last twenty years or so through which state-owned companies in strategic industries around the globe have been sold or transferred into private ownership, produces several consequences that are reflected both in the objectives of the state and in the scope of activity of the privatised entity. The reflections that follow are based on my own research of, and involvement in, the privatisation of state oil and gas companies around the world in the period between 1986 and 1999. They are drawn from equity market publications (distributed widely to investors around the world) on the privatised companies (Bell and Baldwin (1993), Bell et al. (1993), Bell and Davies (1996)) and conference proceedings (Bell (1996)).

1. Prior to privatisation, the state's objectives tend to be focused on ownership and control such as the protection of strategic industries from acquisition by foreign investors or companies and controlling the investment process of the company to meet the state's objectives. After privatisation, the state benefits from dividend income and taxation revenue from a more productive entity, the magnitude of which are determined by the profitability of the company.

2. Either prior to privatisation, or immediately after it, a strategic realignment usually needs to take place to concentrate only on profitable ventures. Under state

ownership, agendas other than profit maximisation that meet social objectives (such as full employment) are often pursued. Such realignment usually results in a reduction in the overall scope of a company's business and a concentration on fewer lines of business in which the company can demonstrate it has a competitive advantage.

3. Privatised companies are free to invest capital in ventures anywhere in the world, rather than being confined to their own country. In addition, privatisation may free them from being concerned with such issues as security of supply of strategic materials for the home nation on behalf of the government, which may not be profitable or may require a large concentration of capital investment.

4. State-owned companies tend to be highly integrated. They often control supply, manufacturing, distribution and retail activities as well as the construction and support services ancillary to these businesses. In some extreme examples from Eastern Europe, this also extended to social services such as medical care and education. Privatised companies are usually much leaner organisations and do not seek to control the whole means of production and distribution. Rather, they concentrate on extracting maximum value from the most profitable parts of the supply chain for the minimum investment of capital.

5. Privatisation usually leads to greater innovation and an ability to pursue new ideas rapidly. This is the result of not having to ask a large bureaucracy (i.e. the government) for permission and funding to pursue new business ventures. If the risk-reward ratio of the new venture is appropriate, capital may be raised for them from private investors, who make investment decisions more rapidly than the state based on more rational profit-based criteria.

Some of these features have resonance with most recent analyses of the textual data from Ugarit, where the king had more interest in the taxation of the fruits of long-distance trade than in controlling it personally (Monroe, 2000: 342). However, due to the final destruction of the city at the close of the LBA, the development of entrepreneurial activities cannot be charted there. As Renfrew (2004) has recently pointed out, one of the most profitable places to look for explanatory models on the nature of the economic restructuring that followed the end of the LBA is in the places

were there appears to have been continuity. This thesis proposes that not all LBA trading relationships were severed at this time, with coastal Phoenicia and Cyprus, particularly the western part of the island, showing a good degree of continuity in trade with each other.

Some of the attributes of modern-day privatisation also have resonance with the decentralised structure of LBA and Iron Age Cyprus and the situation in Zone L2 at the close of the LBA and the Iron Age city-states of Phoenicia. Monroe (2000: 348) has pointed out that during the LBA,

"Merchants thrived in the margins both within and between societies".

Sandwiched between the Hittite and Egyptian empires at the close of the LBA, and with little access to inland trade (at least in the early part of IA I) this is an apt description for Phoenicia. A lower degree of Egyptian control in Zone L2 after the death of Ramesses II (S. Sherratt, 2003b; Stieglitz, 1990) would have provided the climate of innovation for private enterprise, building on a long tradition of maritime trade in the city-states there.

Susan Sherratt (1998: 301) has described the *"coastal moguls"* of 13th-12th century BC Cyprus as a form of institutional *Sea Peoples*, engaged in decentralised trading activities. This calls to mind, once more, the Viking analogy. They could be traders (and even settlers and farmers) when it suited them, as well as pursuing a more violent course of action as destructive opportunistic raiders at other times. The cities of the Phoenician coast, likewise, were operating in a decentralised environment at the close of the LBA. Arguably, as Susan Sherratt (1998, 2003a) has suggested, Cypriot merchants and their Phoenician counterparts were well positioned to capitalise on what happened next.

Taking the privatisation analogy slightly further, with enough knowledge of different parts of the Eastern Mediterranean trade network, the privatised merchants of Cyprus and Phoenicia would have had no need for direction from a higher authority to reshape the scope and geographical reach of their activities in response to the removal of major forces in LBA trade from the map. Nor would such direction have been necessary to identify the products they could profitably trade. This is particularly true for these two areas that had a major maritime tradition by this time. Moreover, their main exports

could be locally sourced (such as copper from Cyprus and timber, olive oil, textiles and wine from Phoenicia) and did not need to come from distant locations overland, as was the case with tin at Ugarit.

This is not to suggest that the sea was a safe place in this period. Rather, the merchants and maritime traders understood these risks and were prepared to take them. In other words, the merchants of Phoenicia and Cyprus could continue to do what they were already doing at the end of the LBA: supplying goods to areas where they were scarce from areas in which they were manufactured or where they were plentiful. Based on the archaeological evidence from Sarepta, manufacturing of olive oil and purple dye continued along with producing the Canaanite jars in which to ship its wine. Its bronze industry also continued to function.

It is simplistic, therefore, to view the change between the LBA and the Iron Age as the replacement of palace administered exchange with entrepreneurial trade. A wholesale replacement of one paradigm for another is not a good explanation for this change and restructuring, or concentration on the parts of the long-distance trade that remained profitable and feasible, would appear to be a better description.

Based on the ceramic evidence presented in Chapter 5, trading relationships between Phoenicia and western Cyprus were probably already well established during the LBA. The excavations at the site of Maa-*Palaeokastro* have yielded a disproportionately high number of Canaanite amphorae that are likely to have come from the central part of the Levantine coast. This site also has the characteristics of a way-station for routes from the Aegean to the Levant that were used to deliver LBA Aegean ceramics, and their contents, to the coastline of Phoenicia (where they are particularly abundant). After Maa is abandoned in LC IIIA, Palaepaphos nearby shows continuity of contact with the Phoenician coast, yielding the earliest examples of Iron Age Phoenician containers on the island. This site has also yielded large quantities of Mycenaean imports from their earliest arrival on the island onwards (Van Wijngaarden, 2002: Catalogue 1, no. 126). It may also have been involved in mediating trade between the Aegean and the Levant, but it was a larger and long-established Cypriot settlement by the time Maa was founded in LC IIC.

Immediately after the destruction of Ugarit, demand for Cypriot copper must have fallen appreciably, especially as the important sites of Alalakh and Emar had also ceased to function. In Cyprus, the number of urban settlements falls and many LC IIC (13th century BC) settlements that participated in trade were abandoned. Susan Sherratt (2003a) has suggested that the central part played by Cypriot harbours in LBA Eastern Mediterranean trade at the beginning of the 12th century BC was challenged by the Phoenicians in later in the century. Another, and not contradictory, explanation might be that some Cypriot centres had lost their main customers, triggering a retrenchment and causing them to be abandoned by LC IIIA (for example Kalavassos-*Ayios Dhimitrios*, Hala Sultan Tekke and Maroni). Perhaps the decentralised nature of the Cypriot copper industry allowed it to restructure in a flexible way, involving cutting copper production and abandoning urban metalworking sites that were surplus to requirements. If this was the case, the current Chief Executives of international mining companies will look on in envy at their ability to balance supply and demand.

Palaepaphos, where knowledge of the settlement is still limited, appears to be the main locus of continuity into the Cypro-Geometric period and it is at this site that the first evidence of Iron Age Phoenician imports appears on the island. It is not possible to say whether there were any Phoenicians resident there from the evidence at hand (unlike the situation much later at the Phoenician colony of Kition in the 9th century BC), but strong connections through trade are manifest. The earliest alphabetic writing so far found on Cyprus (dating to the late-11th – early-10th century BC) also comes from Palaepaphos and could represent another cultural transmission from Phoenicia to the west of Cyprus. This, too, could represent a form of privatisation, representing liberation from the writing monopoly of the scribal schools prevalent in LBA Egypt and Western Asia.

Chapter 5 highlighted the need for more excavation in order to be able to paint more detailed picture of regional differences within Cyprus, both at the close of the LBA and in the earliest years of the Iron Age. Taken individually, none of the pieces of evidence presented with respect to the enduring nature of the relationship between western Cyprus and Phoenicia is conclusive enough to prove the existence of a major trading relationship between them throughout this period. Nevertheless, taken together, the burden of circumstantial evidence for such continuity mounts.

Effectively, therefore, Cyprus and Phoenicia were able to seize the day when crisis struck the region. Unencumbered by imperial agendas, and already familiar with operating within a decentralised trading environment, traders and merchants from these two regions remained open for business, with their primary objective being to generate sufficient returns to continue to trade.

As well as being a supplier of copper, Cyprus was an ideal platform for western expansion for the Phoenicians. Cypriot western connections during the LBA have not been extensively discussed in this thesis, but there is good evidence for trading circuits that included mainland Greece, such as the Point Iria shipwreck (Lolos, 2003). This ship, which foundered in the Gulf of Argos, was probably of Cypriot origin (based on the ceramic evidence) and is believed to have been plying a regular route between Cyprus, Crete and the mainland carrying a cargo of modest value (*ibid.*).

The expansion of the Phoenicians into northern Israel (by the mid-11th century BC) absorbed Tel Dor, Tell Abu Hawam, Akko, Tel Keisan and Achziv probably by conquest. The motive for this may have been to gain access to agricultural resources for the growing cities of the Phoenician coast (Aubet, 1993: 58), rather than trade. In contrast, their initial strategy in Cyprus seems to have been motivated by trade, rather than obtaining foodstuffs or colonisation. As long as Phoenician merchants had access to traders at the Cypriot ports, the points of entry to the island's resources, they were content. They inserted themselves at key points in the supply chain, without seeking to control the whole chain by conquest or colonisation (Braudel, 1984: 65). Kition is the first Phoenician colony to be confirmed by archaeology and dates to the ninth century BC (Aubet, 1993: 42). This marks a change in their commercial strategy, with Tyrians seeking direct control of overseas territory. By the IA II period, Phoenicians had established a commercial network that spanned the breadth of the Mediterranean (Markoe, 1998). At a time of rising demand for metals generally, and iron specifically, Phoenician merchants redoubled their efforts to satisfy the market (*ibid.*).

This thesis has discussed extensively the LBA trade networks in which the cities of the northern Levantine littoral participated, identifying distinctions between the trading relationships of representative Levantine ports. This well-connected, prosperous world came to an end shortly after 1200 BC, but Tyre and Sarepta appear to have avoided destruction at this time. Phoenician mariners and traders, along with their Cypriot

counterparts, were familiar with operating in a decentralised manner and used private initiative and resources to continue trading, particularly with each other, in the dark days of the earliest part of the Iron Age. This close relationship continued for several centuries and eventually resulted in the establishment of Tyre's first overseas colony at Kition. Phoenicia's overseas trading ventures eventually eclipsed those of Cyprus in the period when iron replaced bronze as the predominant metal for weapons. Having the Assyrians at their backs, no doubt, encouraged them to deliver large quantities of precious and base metals to their homeland. The centre of gravity of Phoenicia's trading ventures shifted to the west and, from an economic point of view at least, the Mediterranean became a Phoenician lake.

LIST OF ABBREVIATIONS

Corpora Céramiques	Schaeffer, C., 1949. *Ugaritica II.* Paris.
	Courtois J.-C. and L. Courtois, 1978. Corpus céramique de Ras Shamra-Ugarit. Niveaux historiques d'Ugarit, in C. Schaeffer (ed), *Ugaritica VII*, 192-370. Paris.
	Yon, M., V. Karageorghis and N. Hirschfeld, 2000. *Ras Shamra-Ougarit XIII: Céramiques mycéniennes d'Ougarit.* Paris and Nicosia: Éditions Recherche sur les Civilisations and A.G. Leventis Fondation.
Leonard	Leonard, A., 1994. *An Index to the Late Bronze Age Aegean Pottery from Syria-Palestine. Studies in Mediterranean Archaeology*, **CXIV**. Jonsered: Paul Åströms Forlag.
Ras Ibn Hani I	Bounni, A., E. Lagarce and J. Lagarce, 1998. *Ras Ibn Hani, I: Le Palais Nord du Bronze Récent.* Beyrouth: Institute Français d'Archéologie du Proche-Orient.
RSO III	Yon, M., 1987. *Ras Shamra - Ougarit III: Le centre de la ville, 38-44e campagnes (1978-1984).* Paris: Éditions Recherche sur les Civilisations.
RSO XIII	Yon, M., V. Karageorghis and N. Hirschfeld, 2000. *Ras Shamra-Ougarit XIII: Céramiques mycéniennes d'Ougarit.* Paris and Nicosia: Éditions Recherche sur les Civilisations and A.G. Leventis Fondation.
RSO XIV	Yon, M. and D. Arnaud (eds), 2002. *Ras Shamra-Ougarit XIV: Etudes Ougaitiques. 1. Travaux 1985-1995.* Paris: Éditions Recherche sur les Civilisations.
Sarepta I	Anderson, W., 1988. *Sarepta I: The Late Bronze and Iron Age Strata of Area II, Y.* Beyrouth: Publications de l'Université Libanaise.
Sarepta II	Khalifeh, I., 1988. *Sarepta II The Late Bronze and Iron Age Periods of Area II, X.* Beyrouth: Departement des Publications de l'Université Libanaise.
Sarepta III	Koehl, R., 1985. *Sarepta III. The Imported Bronze and Iron Age Wares from Area II, X.* Beyrouth: Publications de l'Université Libanaise.

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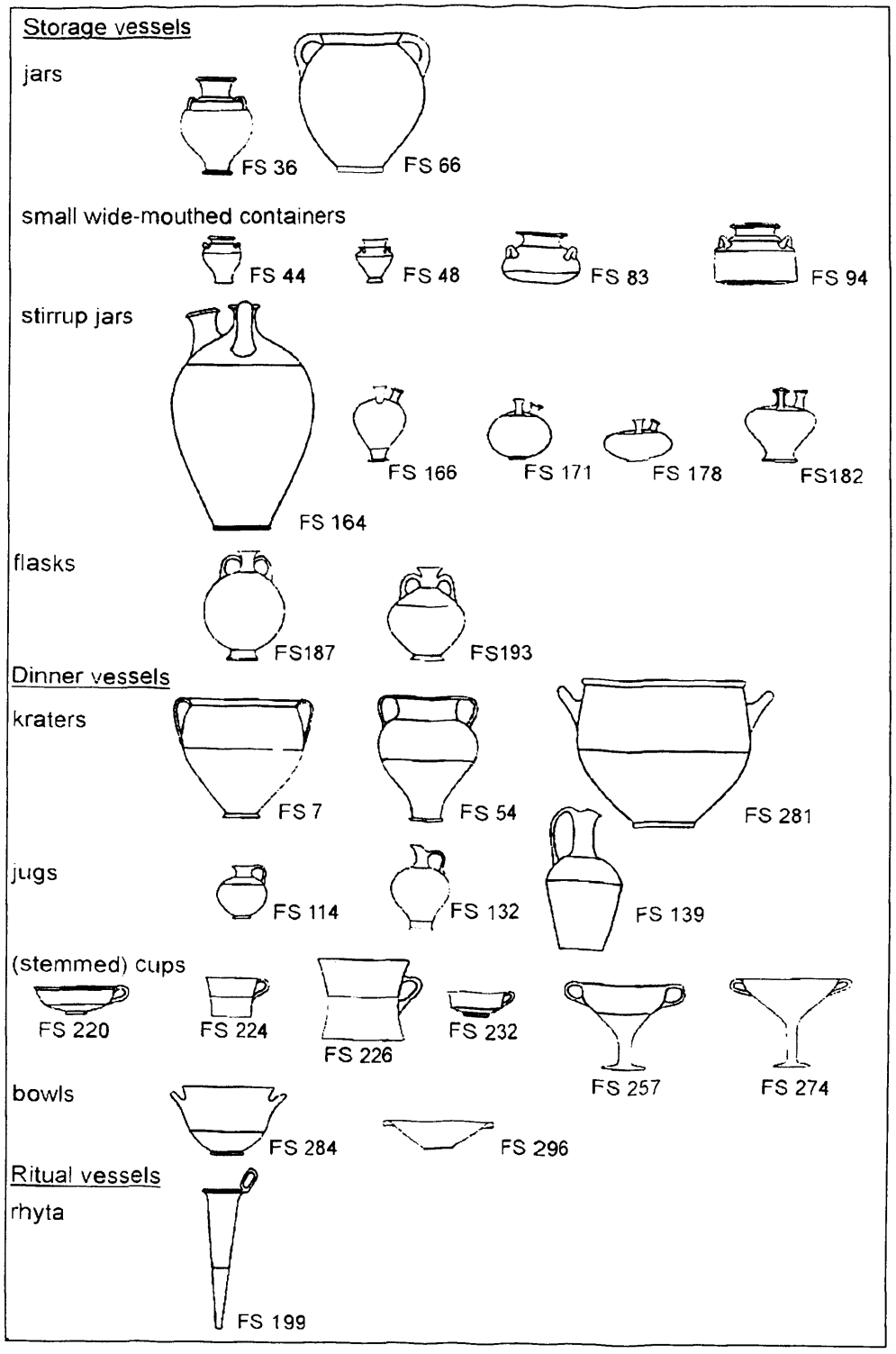
Plate 1: Mycenaean Vessel Shapes



After Van Wijngaarden, 2002: Figure 2.2.

Plate 2: White Slip II Bowl from Ugarit

White Slip II Bowl from Ugarit, Louvre AO 19198; Acropole Tombe XXXVII 1936.

Plate 3: Base-Ring Ware Rhyton from Ugarit

Base-Ring Rhyton with bull's head from Ugarit. Louvre AO 14913 from Acropole Sud-Ouest.

Plate 4: Mycenaean Pottery Database

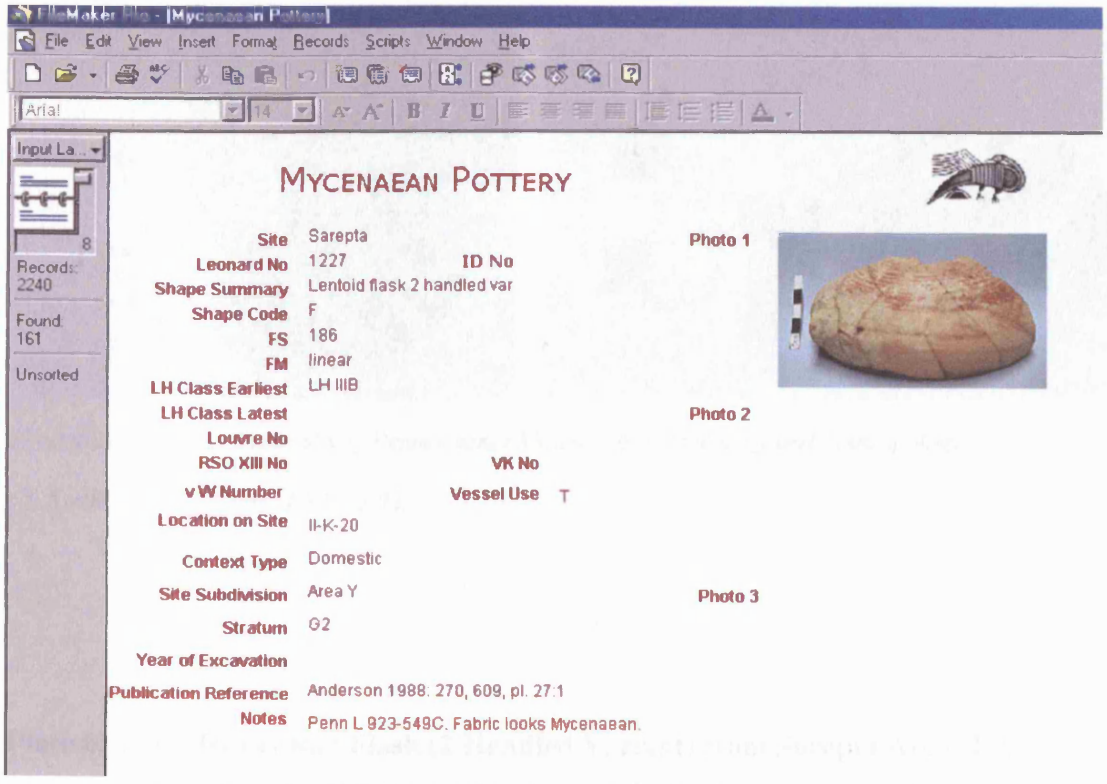
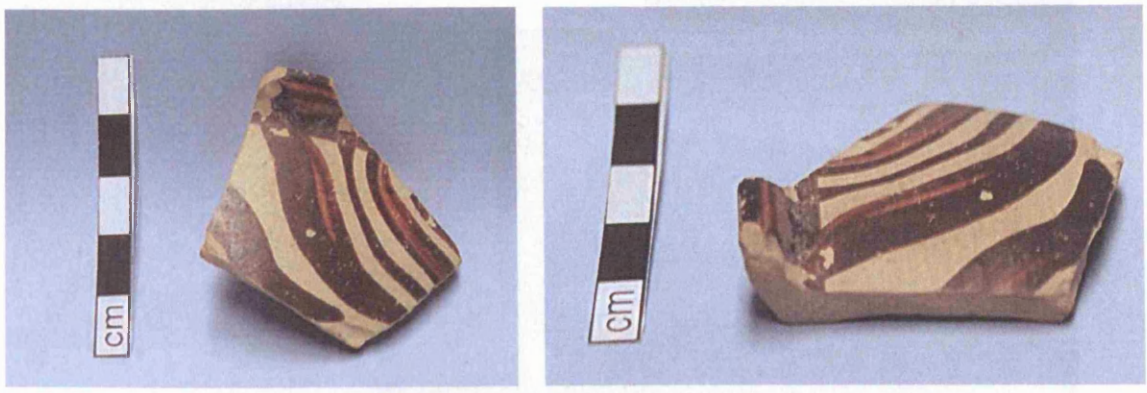


Plate 5: Fragment of a LH IIB Cup from Sarepta Area II, X



Photographed at the University of Pennsylvania Museum of Archaeology and Anthropology.

c.f. Koehl, 1985: 91, figs. 4:92, 15:92.

Plate 6: LH IIIB Lentoid Flask (2 Handled Variant) from Sarepta Area II, Y

Photographed at the University of Pennsylvania Museum of Archaeology and Anthropology.

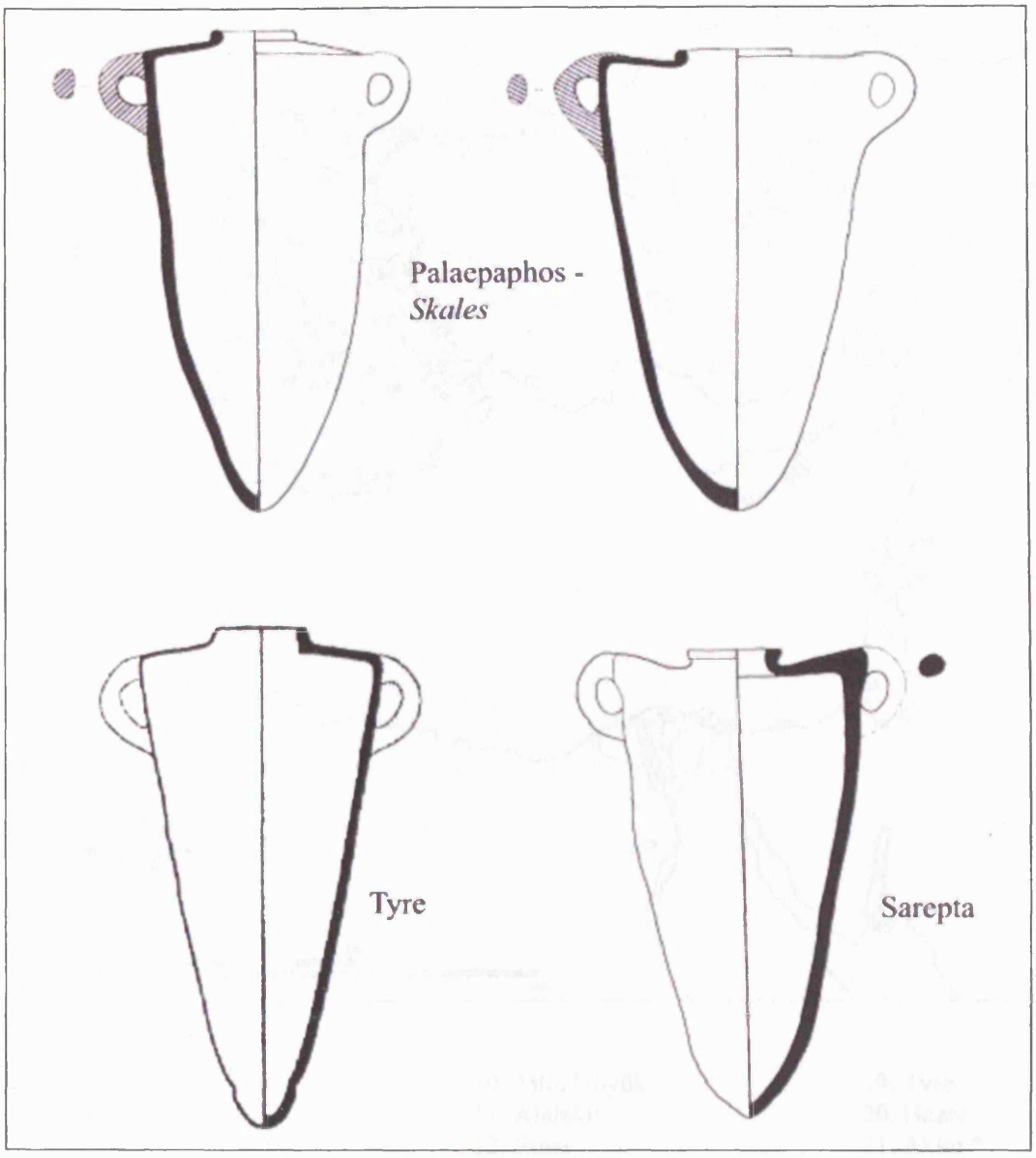
c.f. Anderson, 1988: 270, 609, pl. 27:1.

Plate 7: Oxhide Ingots in Ramesses III's Tomb (KV 11)

View of left and back walls of Side Chamber CG.

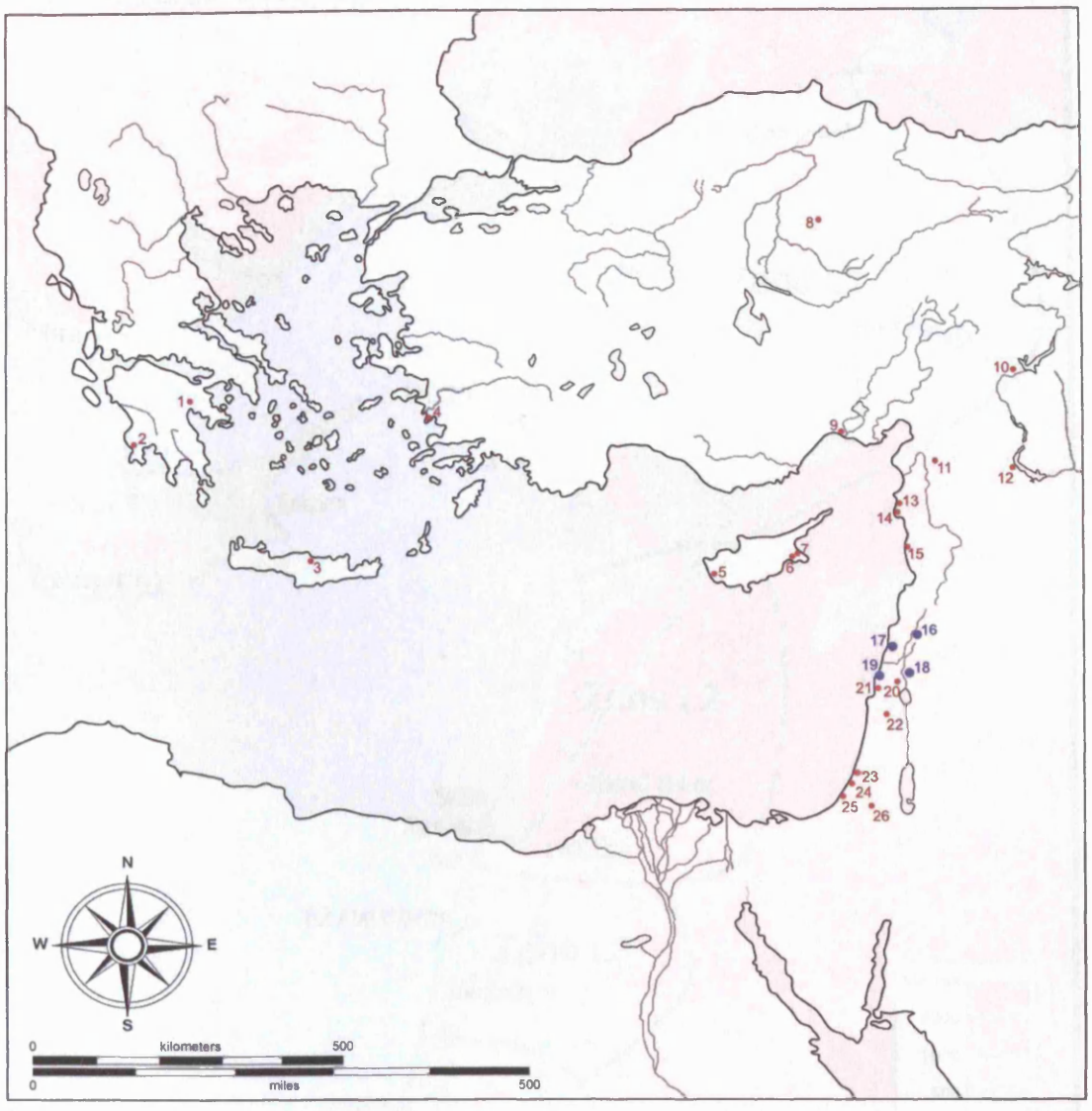
Plate 8: Oxhide Ingot Tribute Scene from Rekmire's Tomb, Thebes

Plate 9: Canaanite Jars from Palaepaphos-Skales, Tyre and Sarepta



After Bikai, 1983: 397; Bikai, 1978: Plate XXXV: 2; Pritchard, 1975: Figure 24: 6.

Map 1: Destructions and Survivals at the End of the LBA



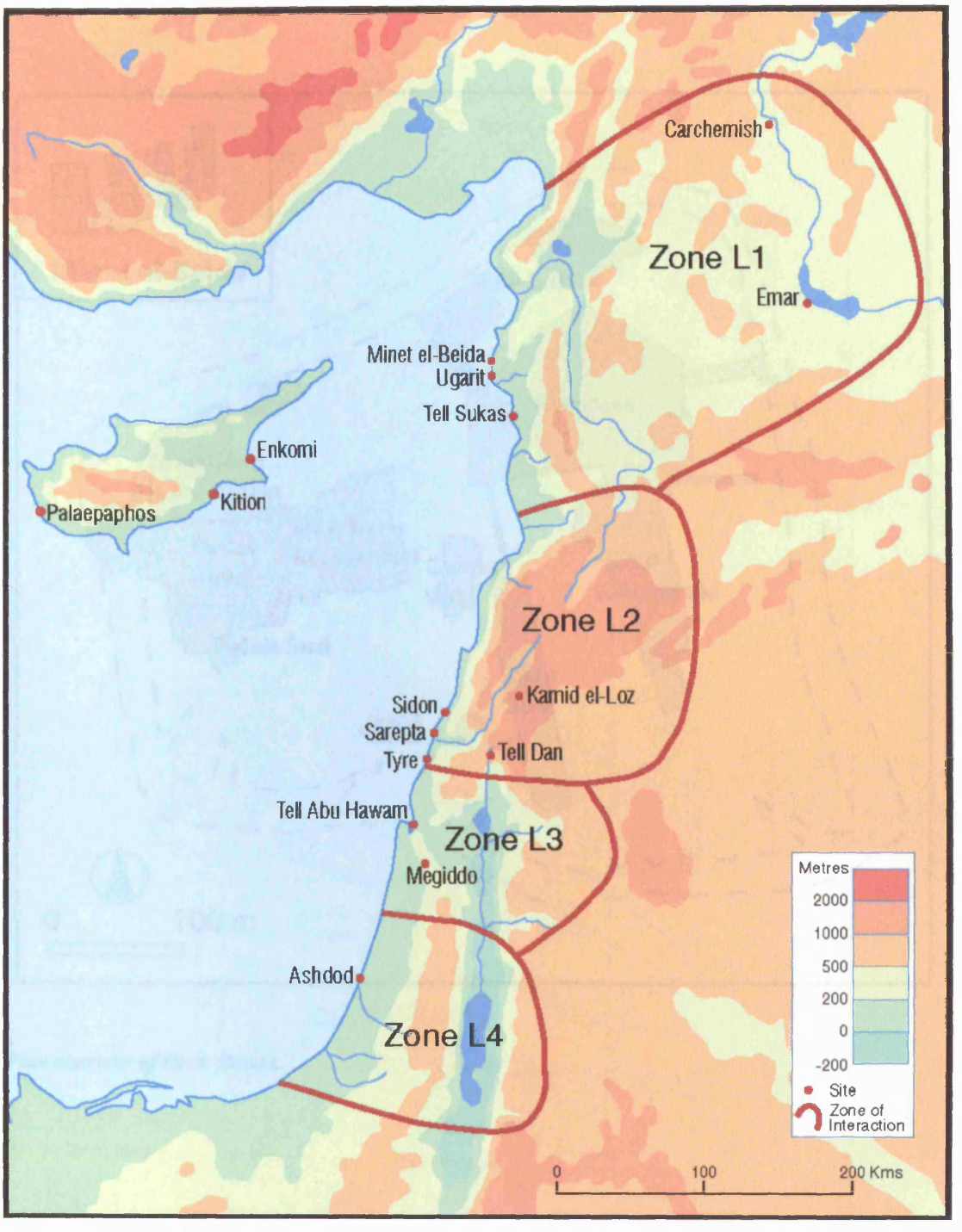
1. Mycenae
2. Pylos
3. Knossos
4. Miletus
5. Maa-*Palaeokastro*
6. Kition
7. Enkomi
8. Hattusa
9. Tarsus
10. Tille Höyük
11. Alalakh
12. Emar
13. Ugarit
14. Ras Ibn Hani
15. Tell Sukas
16. Kamid el-Loz
17. Sarepta
18. Tell Dan
19. Tyre
20. Hazor
21. Akko *
22. Megiddo
23. Ashdod
24. Ashkelon
25. Tell el-'Ajjul
26. Lachish

Adapted to include sites not destroyed from Drews, 1993: Figure 1.

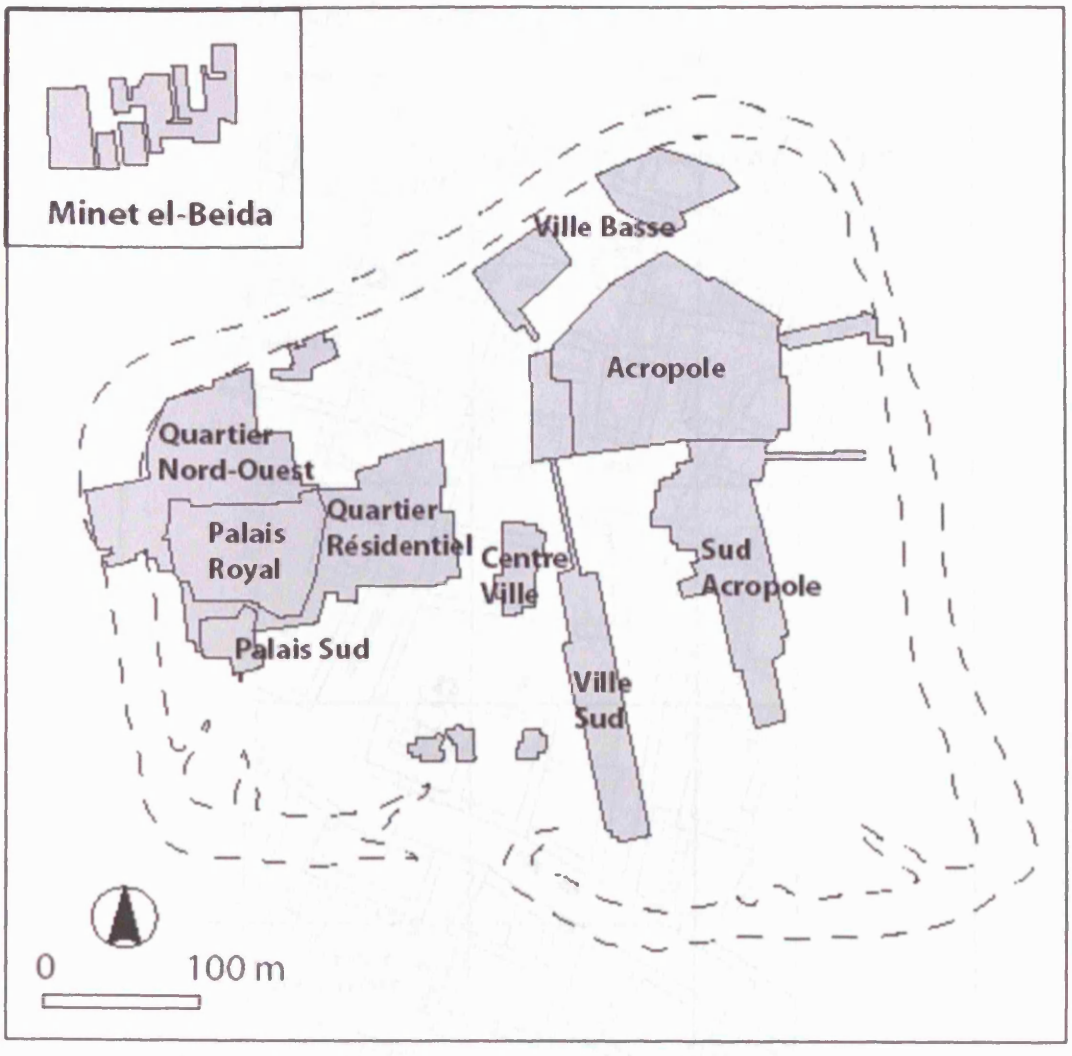
Map template courtesy of ASOR: www.asor.org/pubs/maps/maps.html

** Since submitting this thesis, Professor M. Artzy has informed me that an ongoing review of the stratigraphy of Akko suggests that there was no destruction at the end of the LBA (M. Artzy, personal communication February, 2005).*

Map 2: Levantine Topography and Zones of Interaction

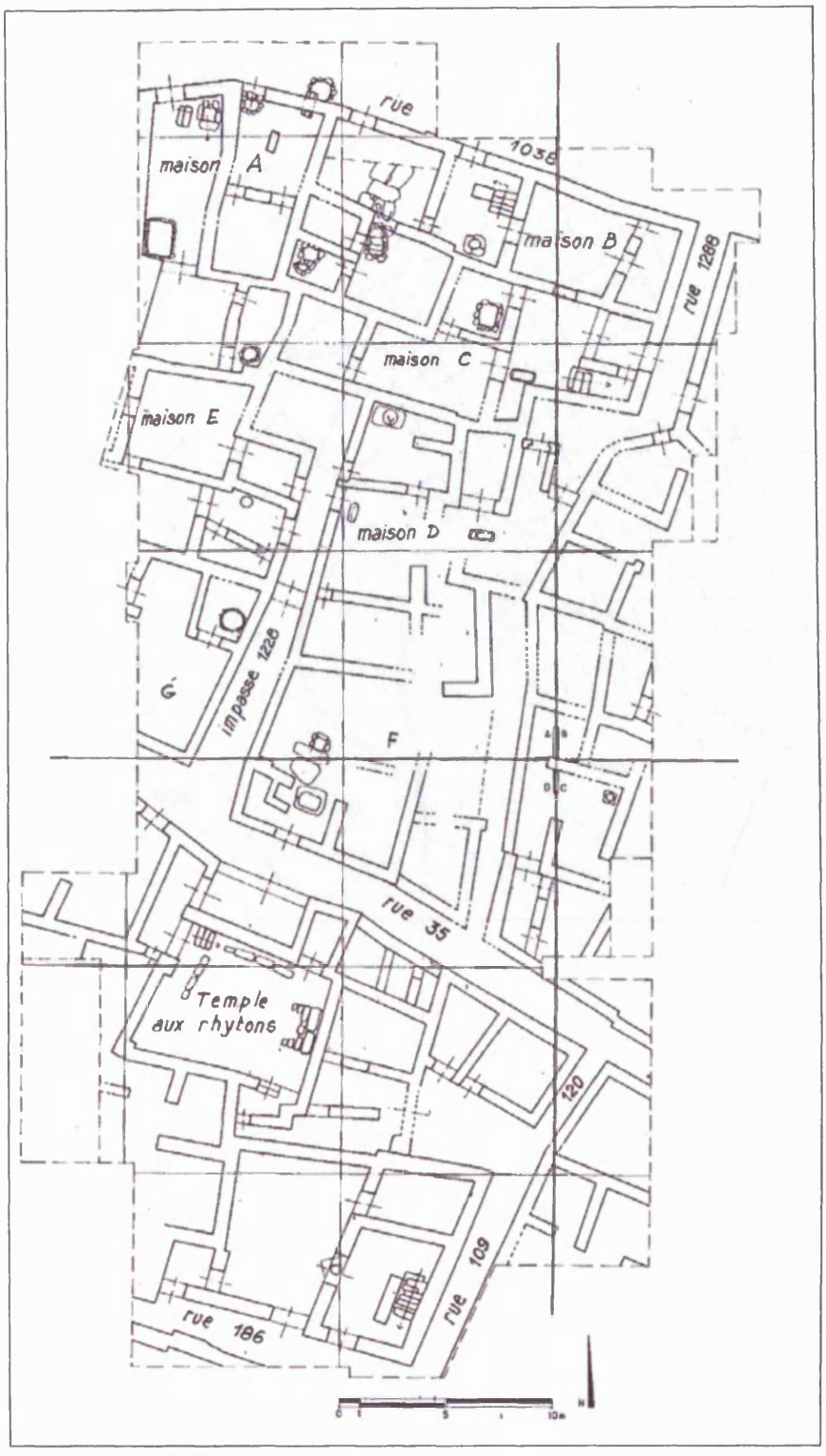


Map 3: Ugarit Excavations



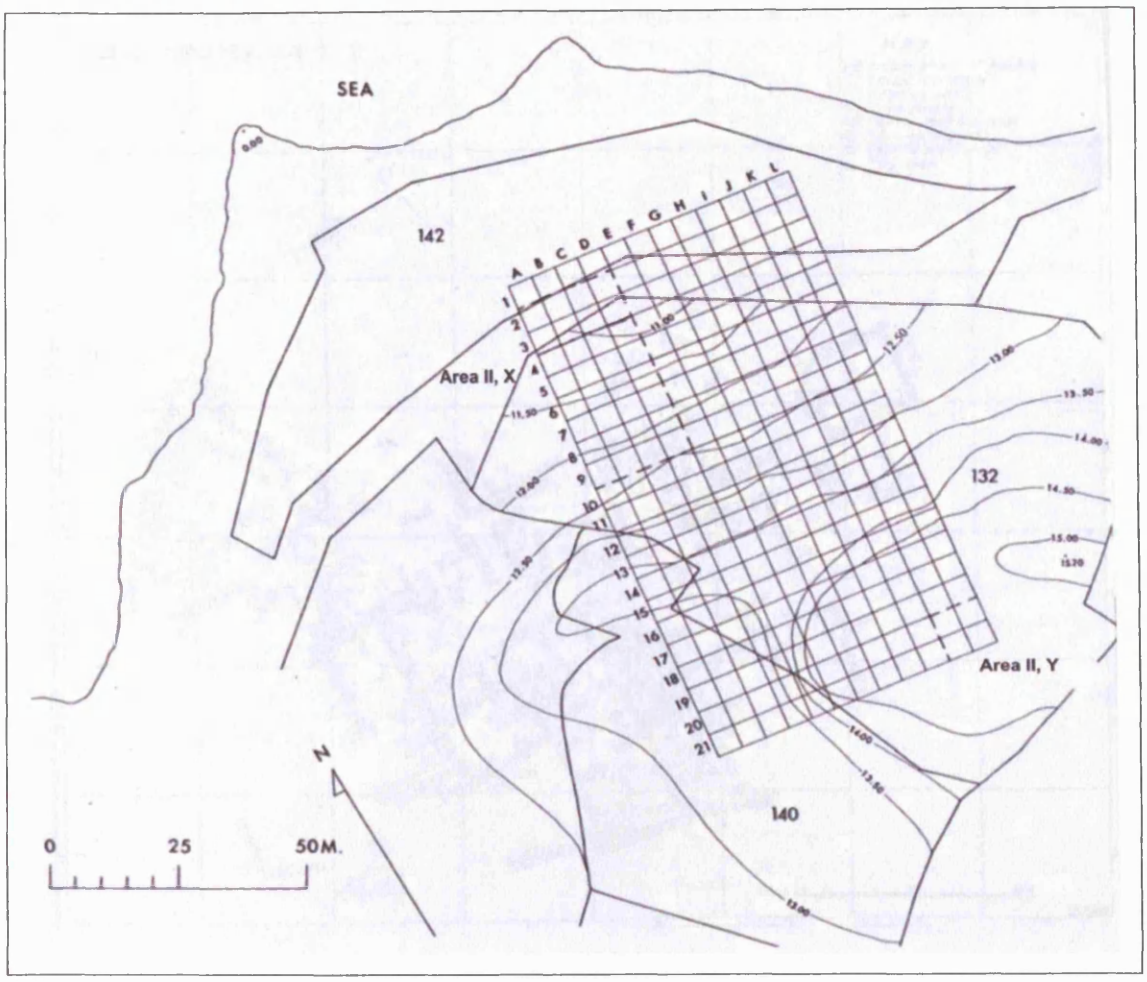
Plan courtesy of Dr A. Bevan.

Map 4: Ugarit Centre de la ville Excavations



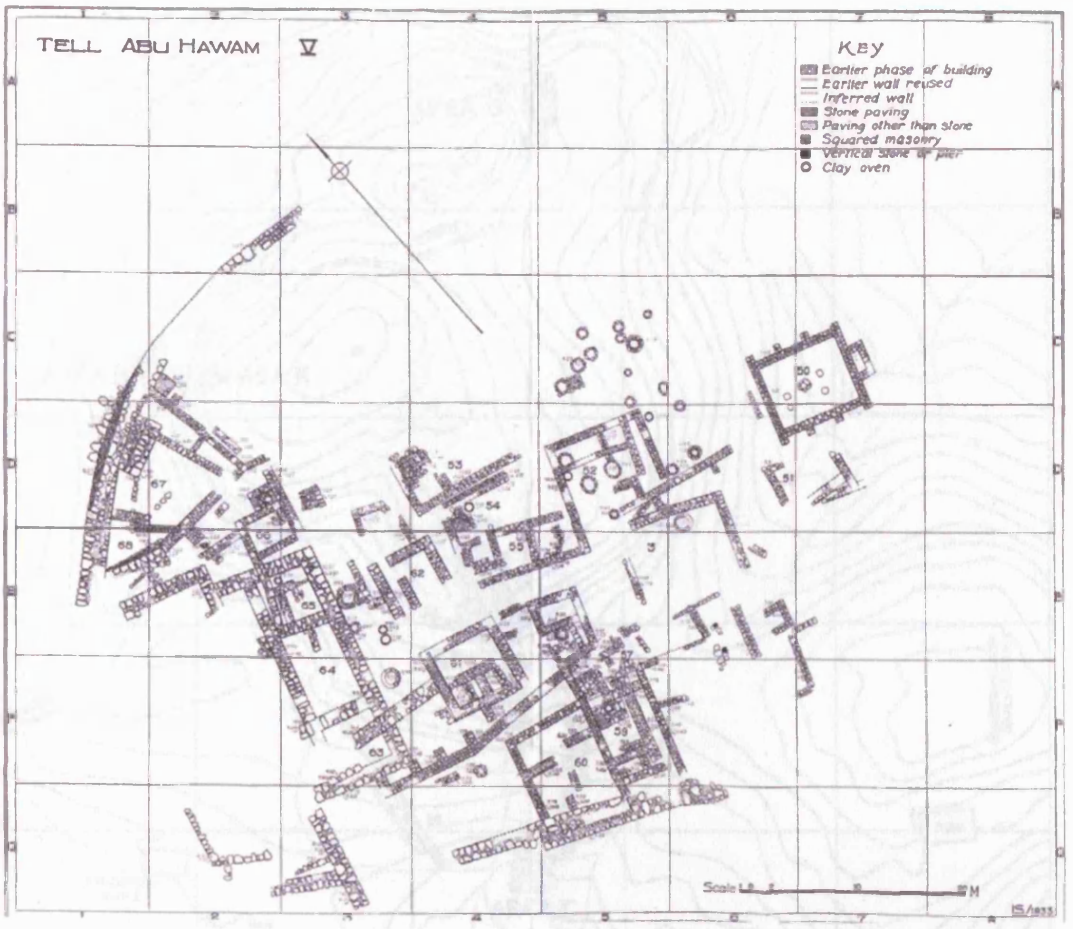
After Yon, 1997a: Figure 44 (Plan du Centre de la ville, état 1994).

Map 5: Sarepta Excavations



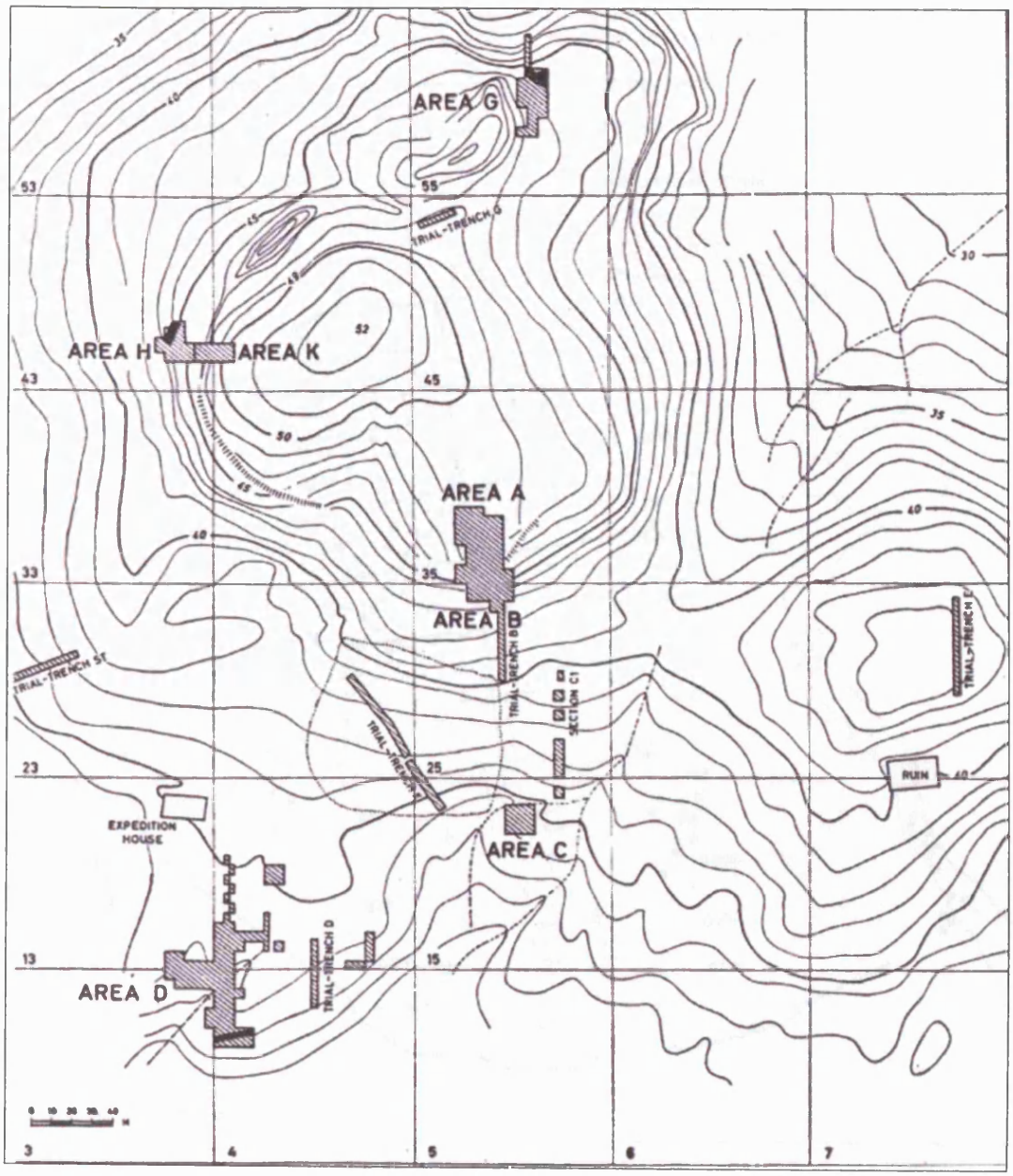
After Anderson, 1988: Plate 2.

Map 6: Tell Abu Hawam Excavations



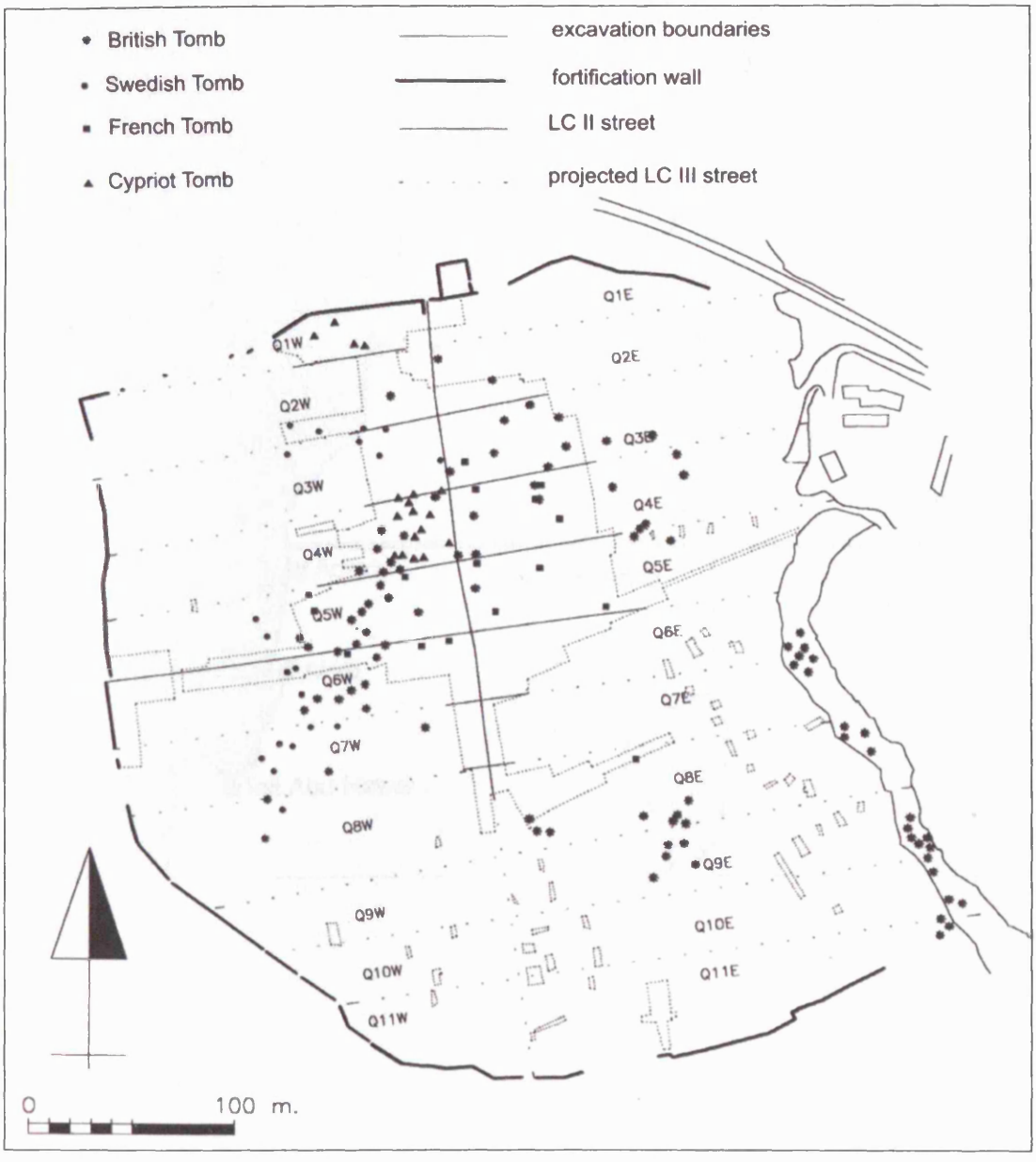
After Hamilton, 1935.

Map 7: Ashdod Excavations



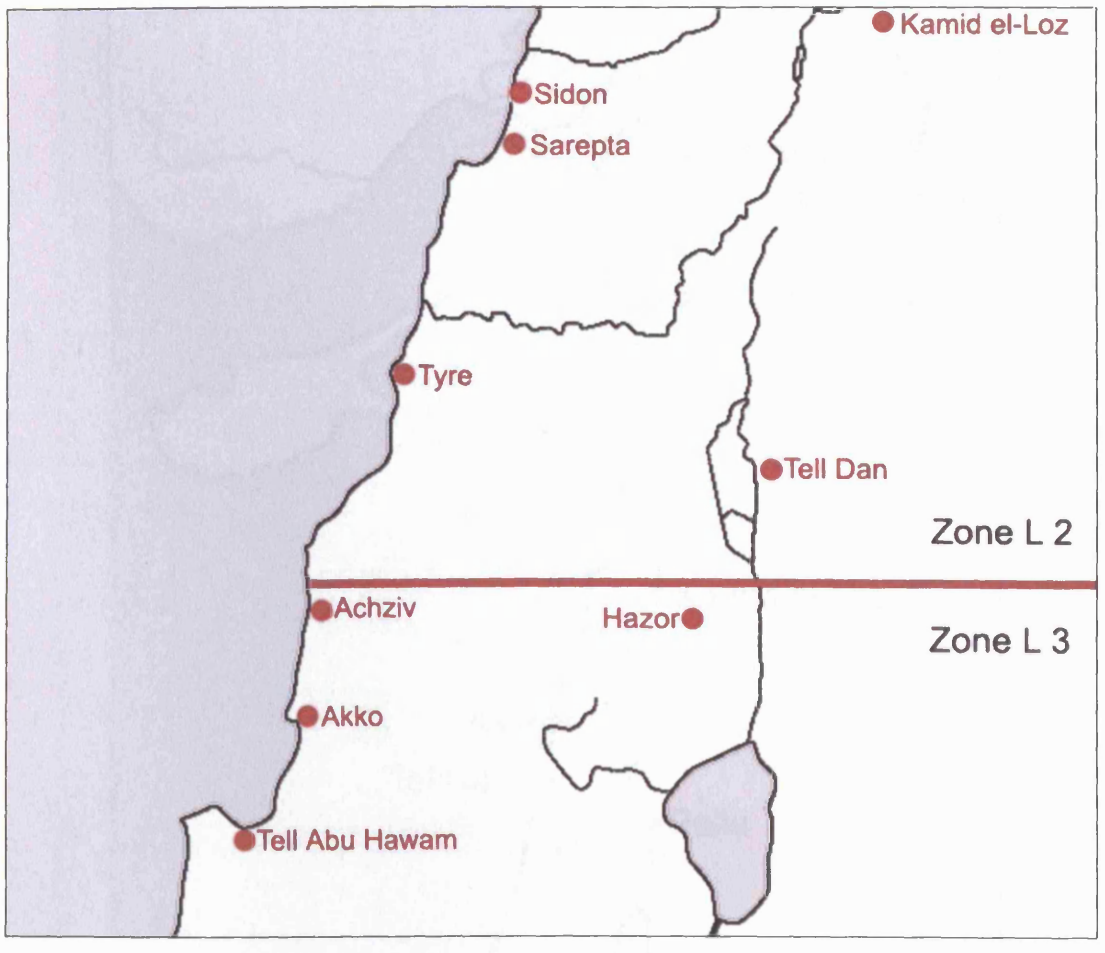
After Dothan, 1971: Plan 1.

Map 8: Enkomi Excavations

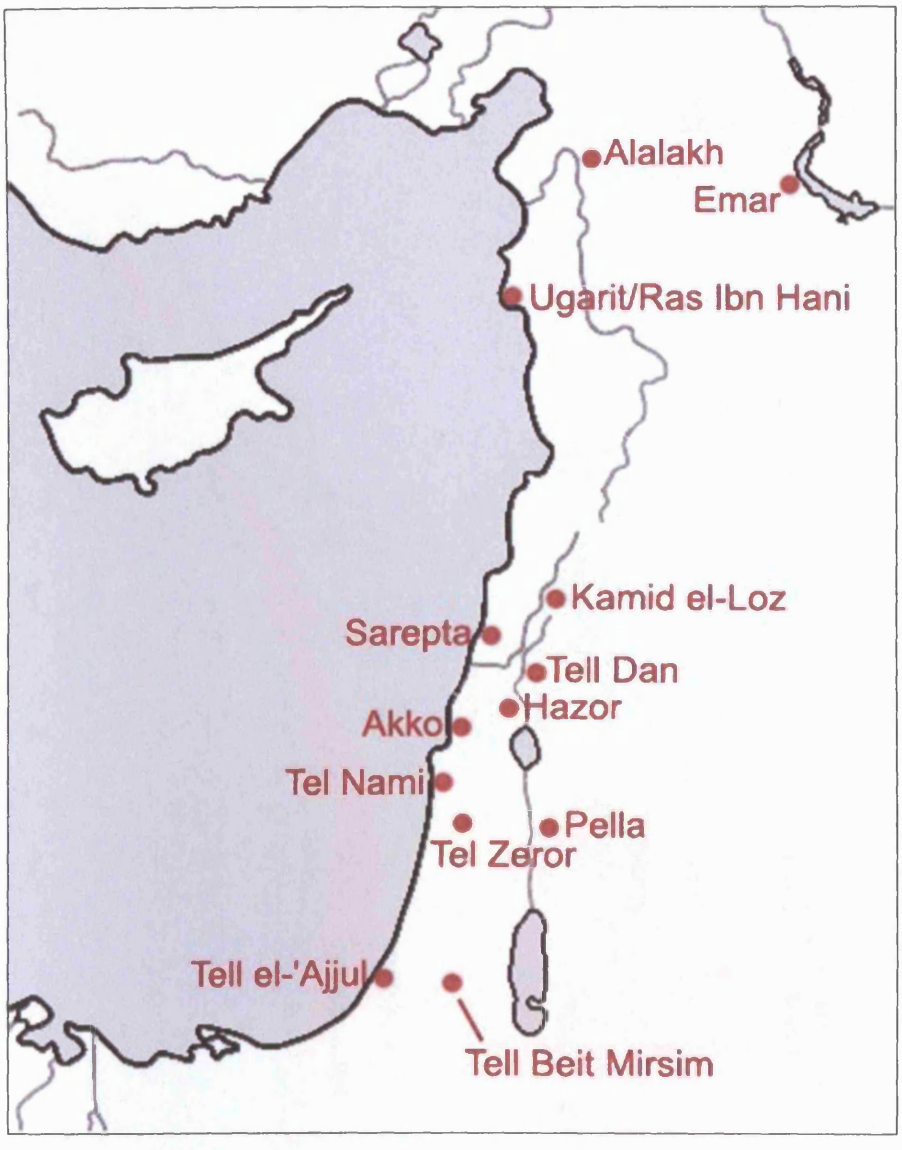


After Van Wijngaarden, 2002: Figure 10.1.

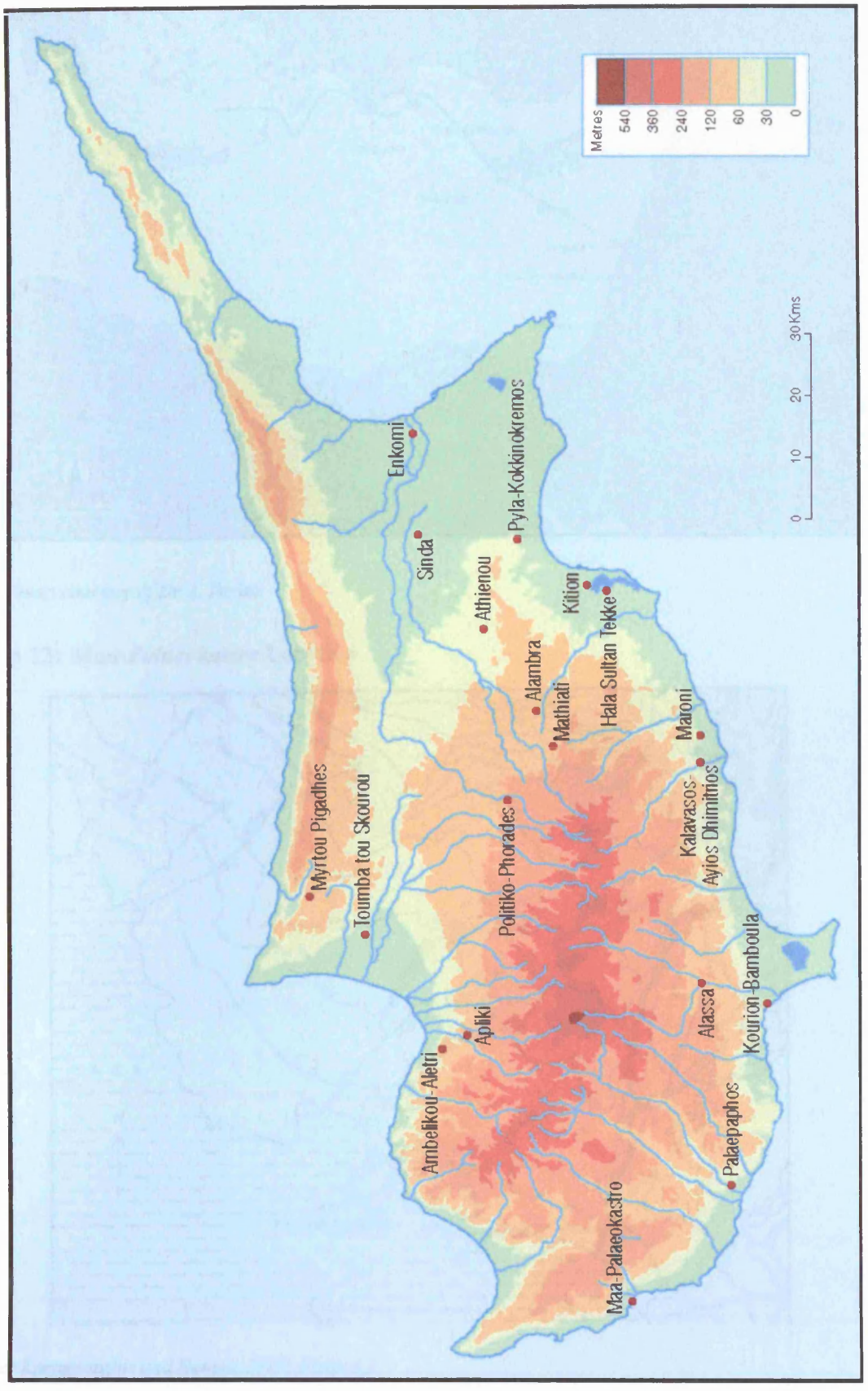
Map 9: Sarepta's Hinterland and Regional Setting



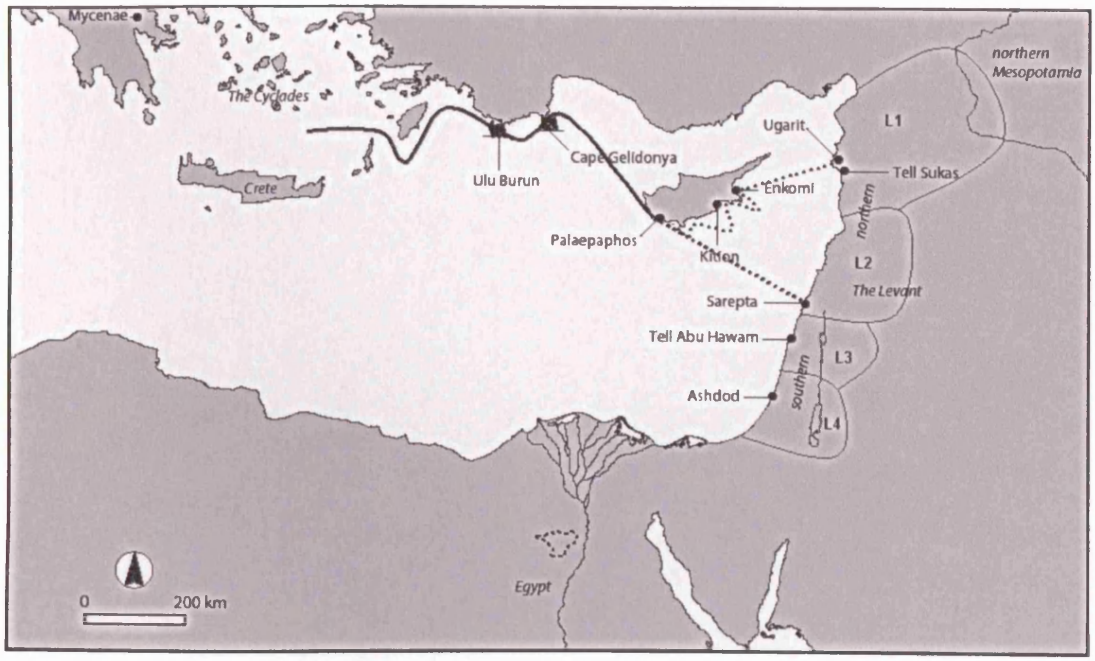
Map 10: Levantine Metalworking Sites in Chapter 4



Map 11: Cypriot Metalworking Sites in Chapter 4

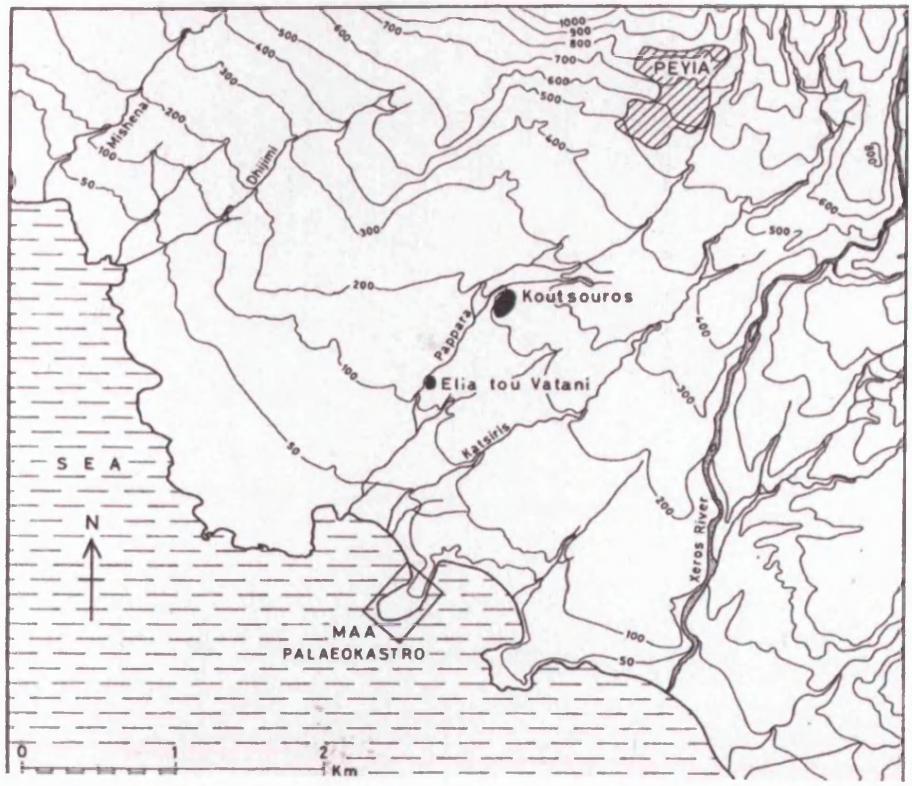


Map 12: Possible Maritime Routes from the Aegean to the Levant



Base map courtesy of Dr A. Bevan.

Map 13: Maa-*Palaeokastro* Location



After Karageorghis and Demas, 1988: Plate 1.2.